AIDMICS BIOTECHNOLOGY iSperm

User Manual

iSperm

Version 7.0-rev4

Index

01
Hardware

Back to Index

Specifications

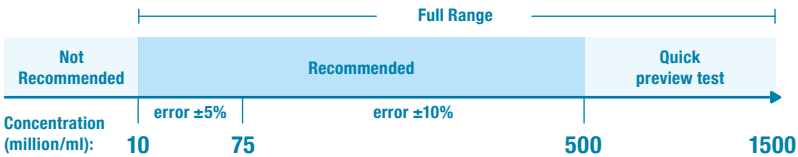
Hardware

1. Optical magnification: equivalent to 200x in a traditional microscope.
2. Optical resolution: 1-1.5μm.
3. Heater: 37 ± 0.5°C (DC 5V).
4. Weight: 350g (excluding the Apple iPad mini).
5. Power and battery: LR44 x 3, up to 45 hours.
6. Color: black.
7. Camera specs for iPad mini.
   - 12MP photos.
   - 1080p/60 Fps Full HD recording.

Software

Range of Analysis:

1. Concentration:



2. Motility :
   0%-100% for any concentration **(optimized at <500 million/ml).**

3. Progressive motility:
   0%-100% between concentration 10-75 million/ml
   (optimized at 30-60 million/ml).

Analysis Time: Concentration & Motility <20sec;
Progressive Motility ~30sec.

Semen Sample

1. Fresh semen:
   - Direct measurement of raw semen for quick screening.
   - **Clear/Purified** extender (at 36-37°C) for diluted semen.
2. Thawed semen:
   - **Clear/Purified** extender (at 36-37°C) for frozen-thawed semen.

Product Components

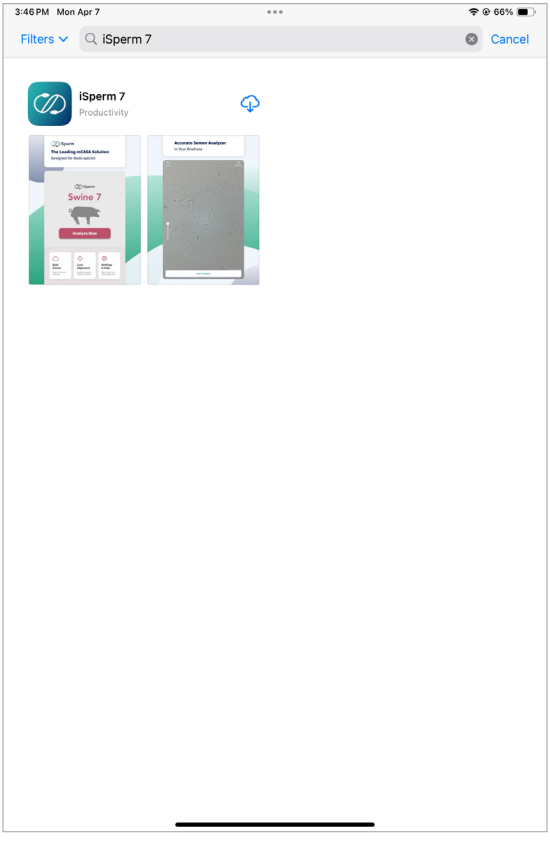
1. iSperm Briefcase
2. Sample Collector
3. Heater and Heater Cable
4. Hex Wrench
5. Sample Chips (Base & Cover)
6. Mini Pipette & Tips
7. User Manual
8. Serial Number Card
9. iPad mini and iPad mini Case
10. Measuring Cups
11. LR44 Batteries
12. iPad Stand
13. Air Blower
14. Bag Strap

Sampling Chips

15 500 Tests per box.

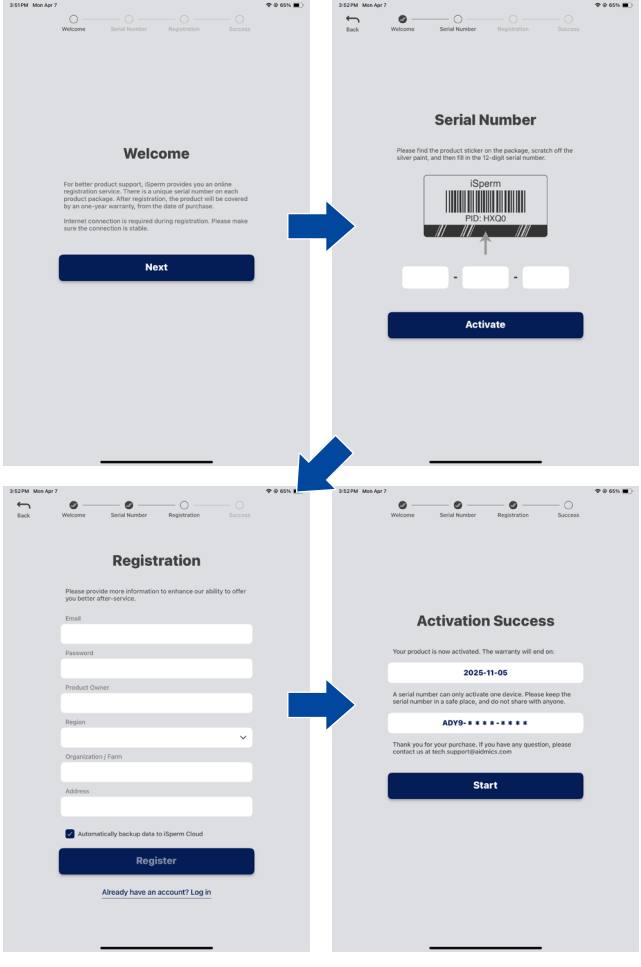
Install iSperm App – 1/2

Search “iSperm 7” on App Store and download.



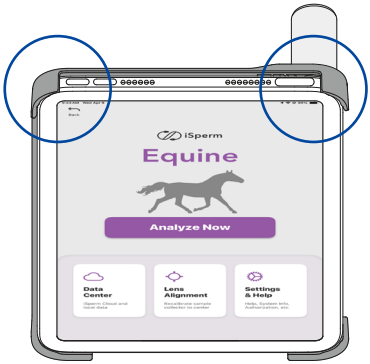
Install iSperm App – 2/2

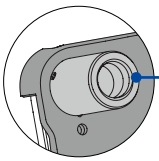
Open iSperm App. Follow the steps to **ACTIVATE** the serial number, provided in the Serial Number Card and **CREATE A NEW ACCOUNT or LOG IN** for iSperm Cloud.



Install iSperm Case with Optical Lens

Insert the bottom corners into the case.

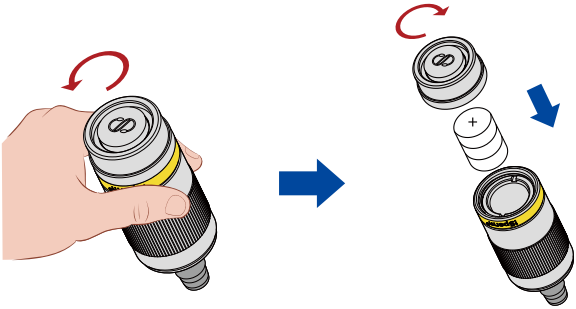




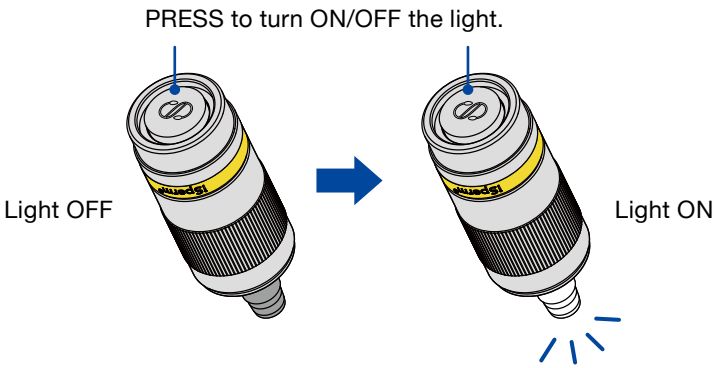
Then press the top corners (where LENS is located) of the iPad into the case.

Reverse the order when removing the case.
This prevents the case from being broken at the corner of the lens.

Use of Sample Collector

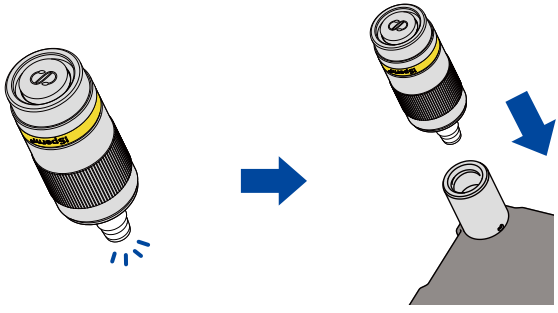


Press the silver ring and screw the end cap counterclockwise, and insert three new LR44 batteries with **the anode (+) facing up**. Screw back the end cap clockwise.



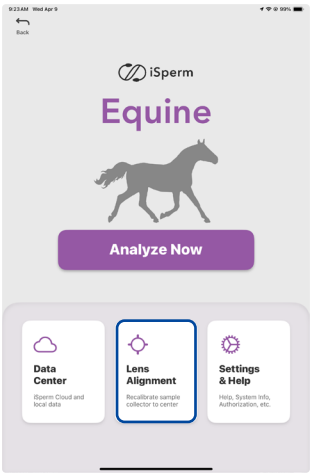
1. **If the light flashes instead of staying on, replace the batteries.**
2. **Turn off the power after use. Leaving the light on may drain the battery within 48 hours.**
3. **If unused for a long period (e.g., after the breeding season), remove the battery to avoid leakage and circuit damage.**

Lens Alignment – 1/4



Turn on the light of the Sample Collector.

Screw the Sample Collector into the optical lens.



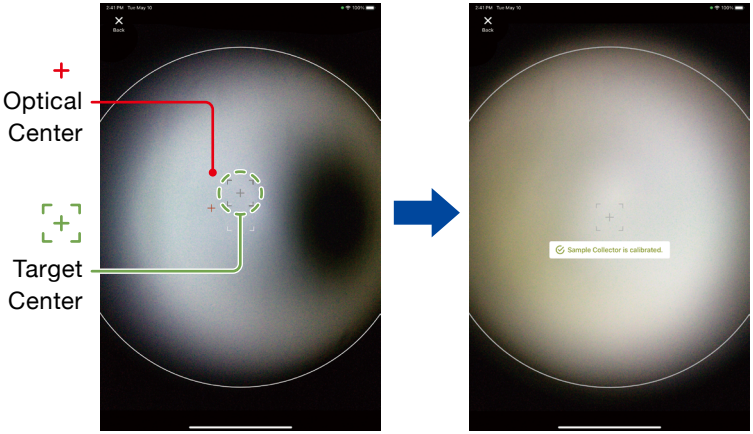
Open the iSperm App and tap “Lens Alignment.”

Users are suggested to execute calibration before the first analysis.

Lens Alignment – 2/4

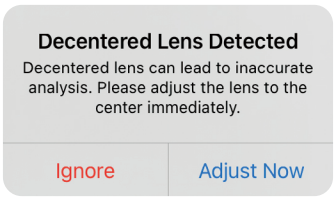
Decentered lens

Calibrated



Adjust the Optical Center + to the Target Center [+].

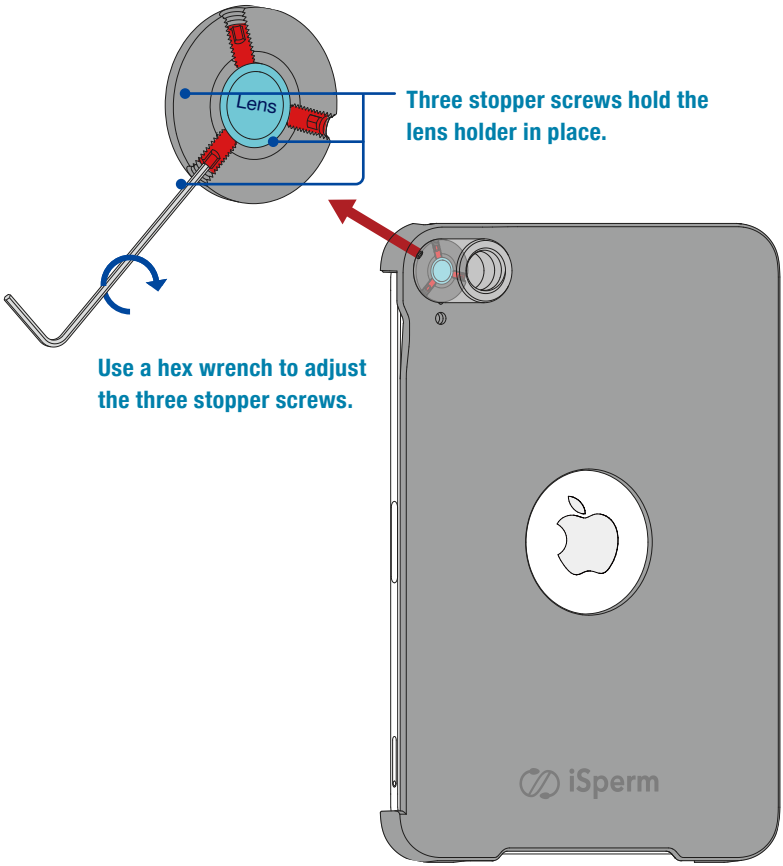
"Sample Collector is calibrated" shows up when the Optical Center overlaps the Target Center.



Once entering the analyzing mode, the decentered lens will cause a warning message.

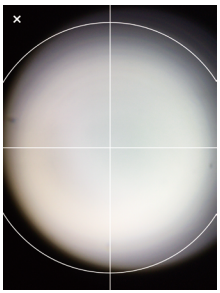
Lens Alignment – 3/4

Adjustment 3-axis lens holders to align the lens for accurate measurements.

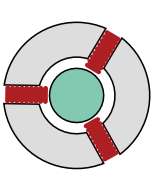


Lens Alignment – 4/4

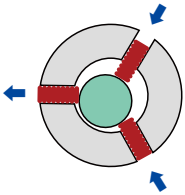
CAUTION: Use hex wrench gently



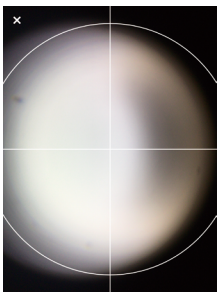
Adjustment example 1:



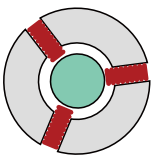
Original



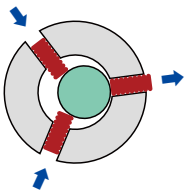
Alignment approach



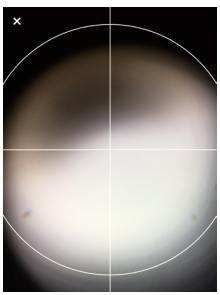
Adjustment example 2:



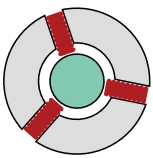
Original



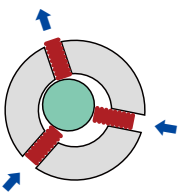
Alignment approach



Adjustment example 3:

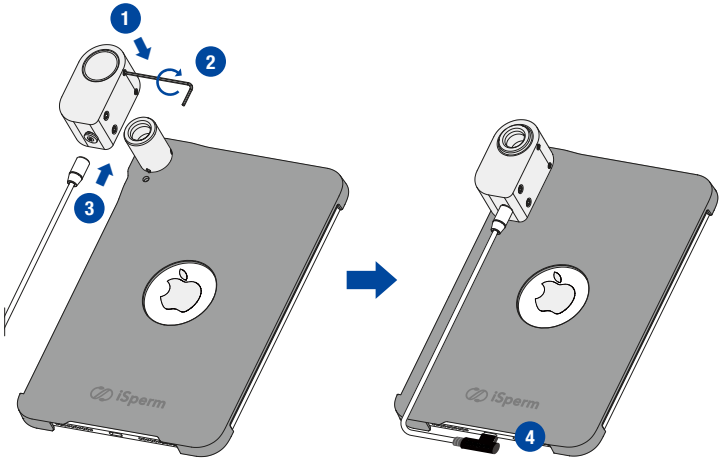


Original



Alignment approach

Heater Installation



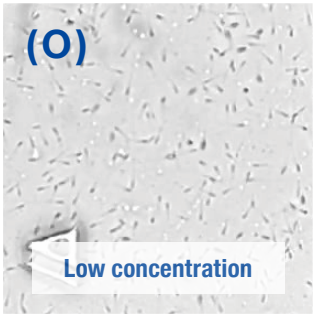
1. Install the Heater with the optical lens holder.
2. Use a hex wrench to fasten the heater.
3. Connect the power cable to the heater.
4. Connect the power cable to the USB-C port at the bottom of the iPad (recommended), or use the original wall adapter.

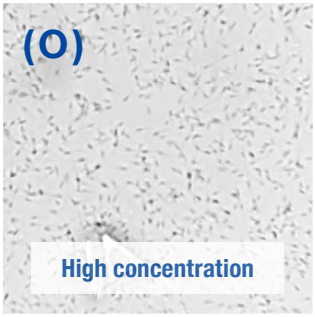
The LED indicator will turn on, once the heater is connected to the power. When the LED starts flashing, this means that the temperature has reached 37±0.5 °C.

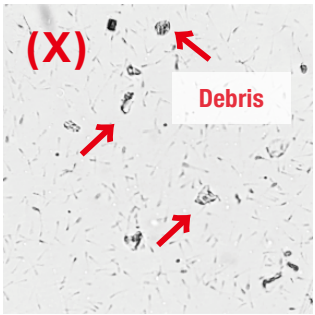
02
Semen Dilution & Sampling

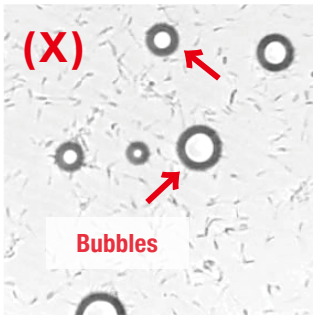
Back to Index

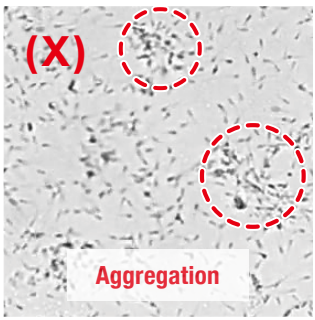
Basic Principle - Preferred Specimens

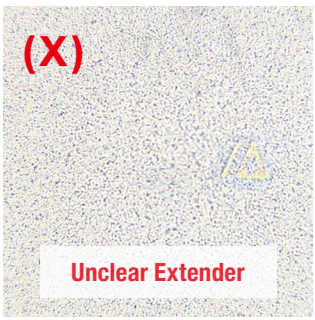




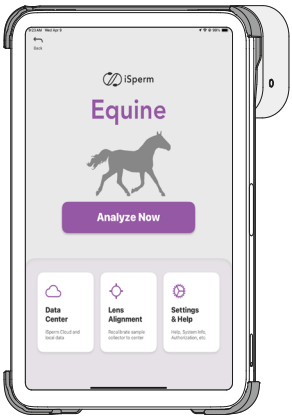








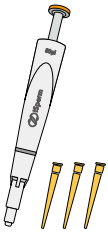
Basic Principle - Items in Use



iSperm
(iPad mini/Lens/Heater)

Sample Collector

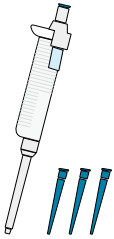
Stand



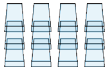
iSperm Mini Pipette & Tips

Base Chip

Eppendorf



Micropipette & Tips



Cover Chip

Measuring Cup

Basic Principle - Semen Dilution

Range of analysis:

Parameters	Full Range	Optimized Range
Concentration	10-1500 million/ml *500-1500 million/ml for quick preview test only	<500 million/ml
Motility	0%-100%	0%-100% *at concentration <500 million/ml
Progressive Motility	0%-100% *at concentration between 10 and 75 million/ml	0%-100% *at concentration between 30 and 60 million/ml

Required diluting semen to 30-60 M/ml to obtain accurate readings and the kinematic parameters.

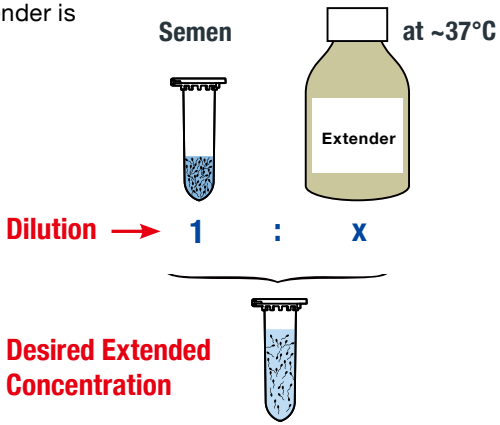
Species	Typical Concentration	Concentration that dilute (Semen : Extender, 1 : x)	
		Progressive test	Quick test
Equine	70-200 M/mL	1:5	1:1
Canine	70-200 M/mL	1:5	1:1
Swine	70-200 M/mL	1:5	1:1
Bovine	800-1100 M/mL	1:30	1:5
Caprine	1000-3000 M/mL	1:40	1:5
Ovine	1000-3000 M/mL	1:40	1:5
Cervine	1500-2500 M/mL	1:40	1:5
Poultry	3000-5000 M/mL	1:100*	1:9

* For direct high-ratio dilution of fresh semen only. The type of extender used will directly affect post-dilution motility. If needed, please contact us to learn more about the recommended extender.

Basic Principle - Dilution Ratio

Dilution Ratio example:

Add semen into the extender is recommended.



Dilution Ratio	Semen	Extender
1:1 (2x)	100 µL	100 µL
1:2 (3x)		200 µL
1:3 (4x)		300 µL
1:4 (5x)		400 µL
1:9 (10x)	20 µL	180 µL
1:14 (15x)		280 µL
1:19 (20x)		380 µL
1:29 (30x)		580 µL
1:39 (40x)		780 µL

Dilution Methods – 1/2

• Partial Dilution (For Progressive Motility)

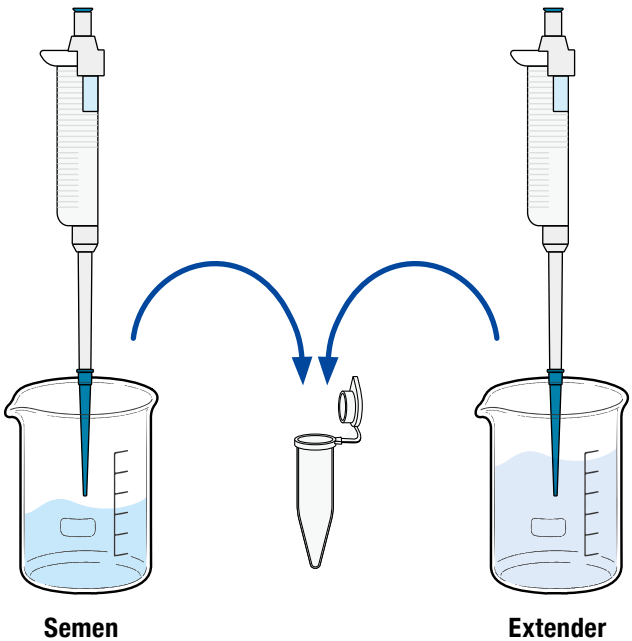
Taking a small portion of semen and diluting it with an extender. Dilution ratio ranges from 1:5 to 1:10.

You can also use the iSperm Mini Pipette (fixed volume of 50 µL) to perform a 1:5 dilution.

Commonly used when :

1. Progressive motility readings are needed.
2. Raw semen is limited and needs to be preserved for AI (e.g., Equine, Poultry, Bovine, Ovine).

Tools Needed: Eppendorf, Micropipette (10-1000uL).



Dilution Methods – 2/2

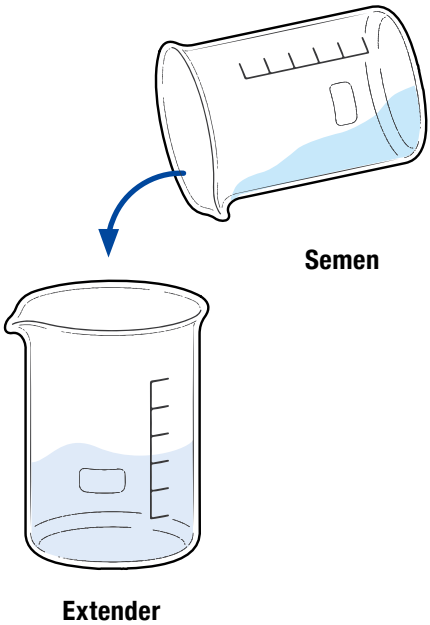
• All-in Dilution (Convenient, Fast)

Dilution of the entire collected raw semen with an extender.
Dilution ratio used is 1:1 or 1:2.

Commonly used when :

1. An extender is added to prolong sperm motility.
2. Raw semen is sufficient, meeting AI standards even after dilution (e.g., Swine, Canine).

Tools Needed: Beaker.

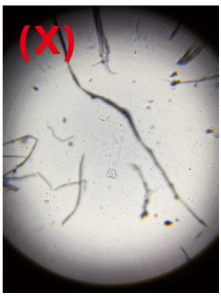


Preparatory Work

This step is necessary for all sampling methods.

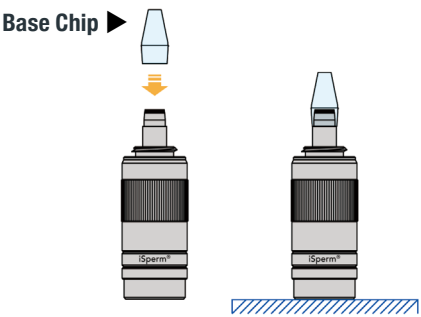
- Use the working board in the iSperm Briefcase, or find a flat, firm/stable surface (e.g., table).
- Clean the working board/table surface.
- Dusty surface could contaminate “Cover Chip” and hinder the analysis.

working board



iSperm view of dust/ fiber on the Cover Chip.

- Mount “Base Chip” onto Sample Collector.
- Place “Sample Collector” on the table.



firm and stable table

Three Methods of Sampling

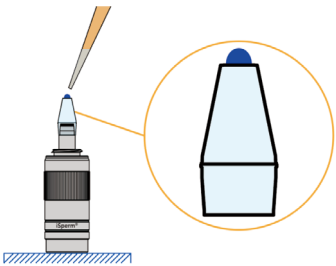
⚠ **Please avoid adding excessive semen to prevent contamination of the analysis.**

❶ Cover Method

- Use the iSperm Mini Pipette.
- Fixed volume of 50 µL.

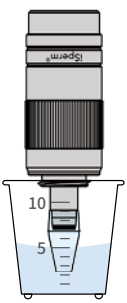
❷ Base Method

- Sample volume: 7.5µL.
- Best when the technician is familiar with pipette skills or when limited sperm is available. A variable volume micropipette is required.



❸ Dipping Method

- For quick preview tests or for fixed sperm.
- Only use this method if no tools are available.

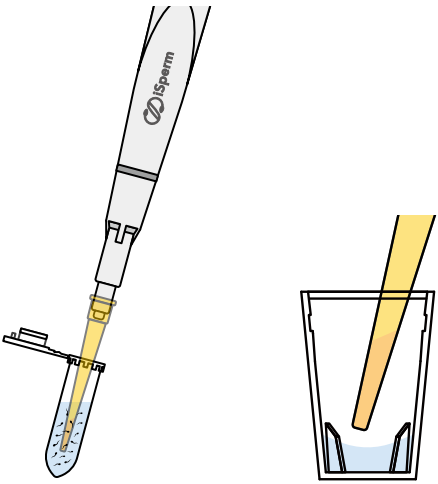


Cover Method – 1/2

iSperm Mini Pipette Tutorial

1. Use the mini pipette to mix the semen gently and thoroughly.
   - **10-15 times** in general to make the semen well-mixed and evenly distributed.
   - **gentle speed** to prevent bubbles.

2. Use the mini pipette to draw the semen sample and inject it into the Cover Chip.

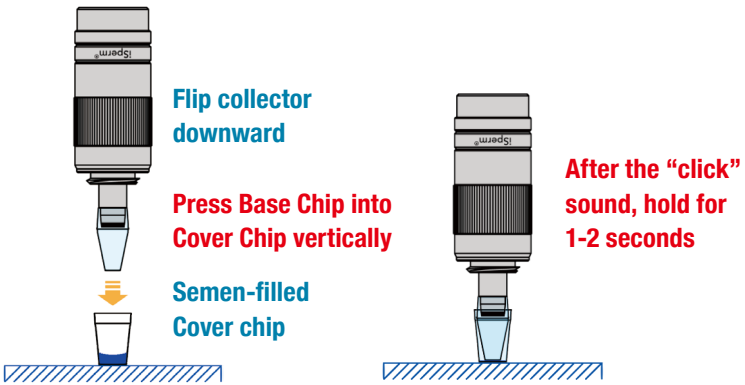


Cover Method – 2/2

3. Place semen-filled **“Cover Chip”** on a clean table with open-side facing up.

4. Sample Collector Flip downward.

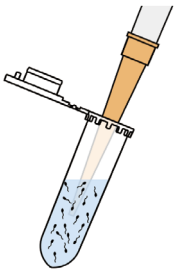
5. Press Base Chip into Cover Chip vertically. One will hear a “click” first; then, continue to press down for another 1-2 seconds.

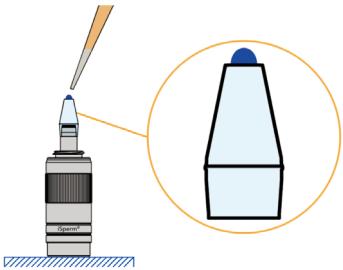


Base Method – 1/2

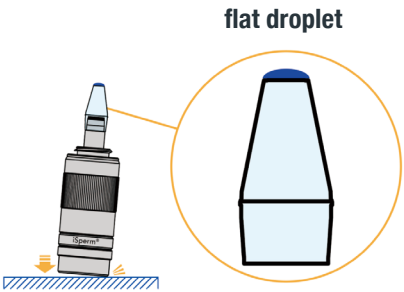
1. Mix semen gently and thoroughly with a 100-1000 µL micropipette (volume ≥ 50% of sample).
   - **10-15 times** to make the semen well-mixed and evenly distributed.
   - **Gentle speed** to prevent bubbles.

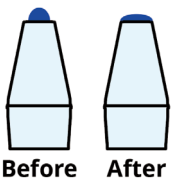
2. Drop **7.5µL** onto the Base Chip center area.





3. Give Sample Collector a gentle knock against the table to spread the droplet.
   - **Flat semen droplet is crucial to reduce CV.**





a gentle knock would do the trick

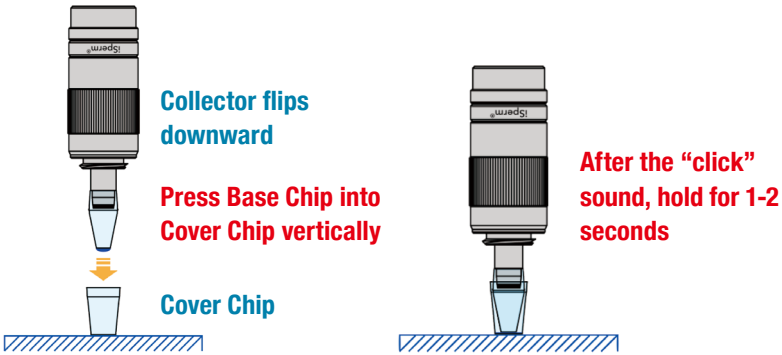
***Go to next step as soon as possible**

Base Method – 2/2

4. Place **“Cover Chip”** on a clean table with open-side facing up.

5. Flip Sample Collector downward.
   - **Droplet will remain on Base Chip.**

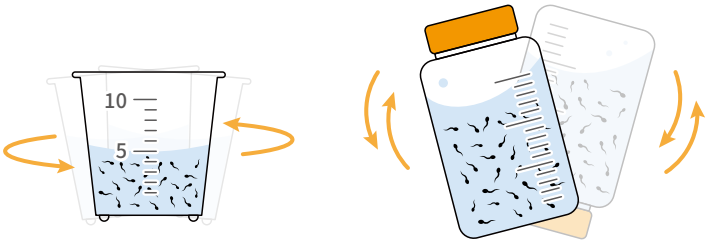
6. Press Base Chip into Cover Chip vertically. One will hear a “click” first; then, continue to press down for another 1-2 seconds.



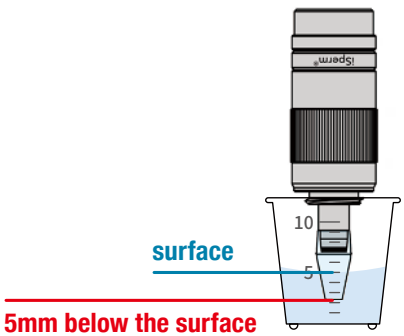
Dipping Method – 1/2

This method is for quick preview tests or fixed semen.

1. Gently swirl the liquid to ensure the sample is mixed evenly. If the container has a lid, mixing by gently inverting it several times is recommended.



2. Dip Base Chip into semen.
   - Immerse Base Chip **5mm below the semen surface.**

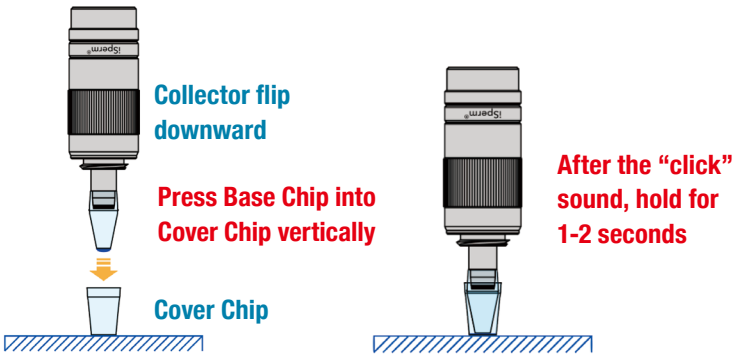


Dipping Method – 2/2

4. Place **“Cover Chip”** on a clean table with open-side facing up.

5. Flip Sample Collector downward; **Droplet will remain on Base Chip.**

6. Press Base Chip into Cover Chip vertically. One will hear a “click” first; then, continue to press down for another 1-2 seconds.



03
Software

Back to Index

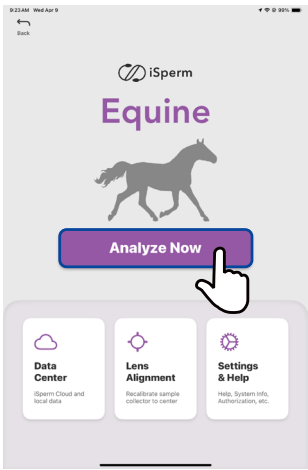
Semen Analysis – 1/4

1. Place the iPad on a stand.

Do NOT lean Sample Collector against the table

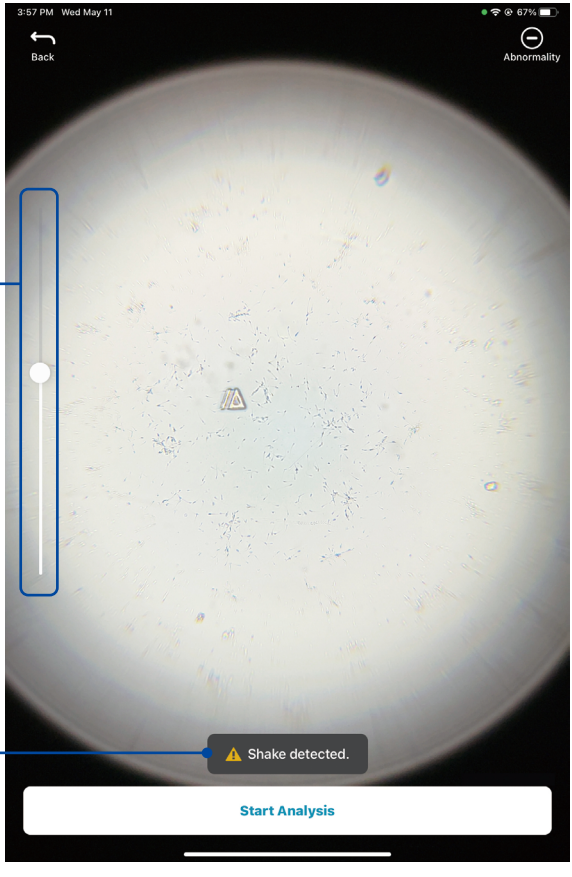
◀ Stand

2. Select the species to analyze. (Unavailable species are either planned for future updates or require purchase/authorization. Please contact us if you have questions.)
3. Tap “ Analyze Now”



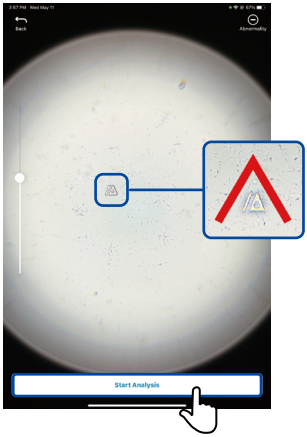
Semen Analysis – 2/4

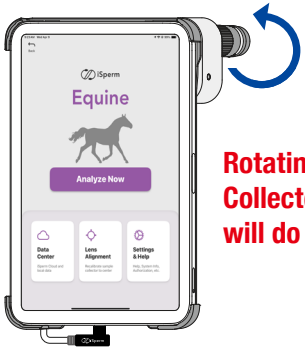
3. Preview image. (see details in “Preferred Specimens”)



Semen Analysis – 3/4

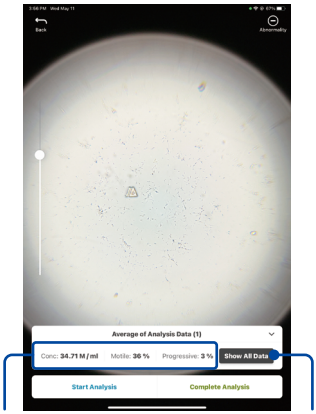
4. Rotate Collector until the logo is pointing up. Tap “Start Analysis.”
   Multiple-view (typically 4-view) analysis is recommended.

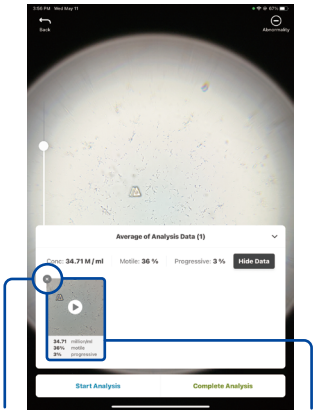




Rotating Collector gently will do the trick

5. Check the analyzed result.





Analyzed Results

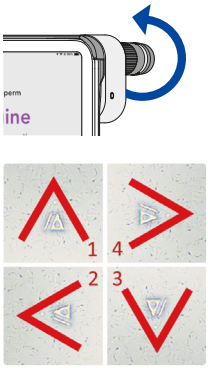
Tap “Show All Data” to view the details.

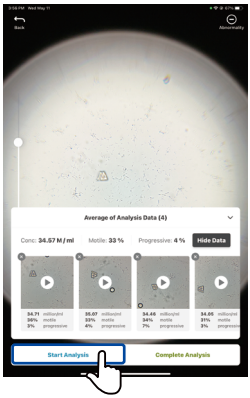
Tap “X” to delete a measurement.

Tap image to view a video

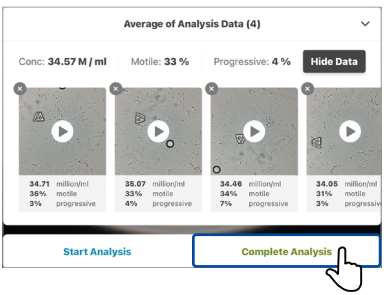
Semen Analysis – 4/4

6. Rotate Collector to complete 4-view analysis. Tap “Start Analysis” for every direction.

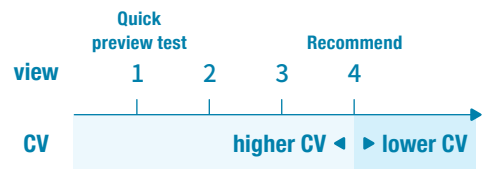




7. Check the “average” of the repeated tests on the screen. Tap “Complete Analysis” to finish and conclude the tests.



The relationship between views and coefficient of variation (CV) values:

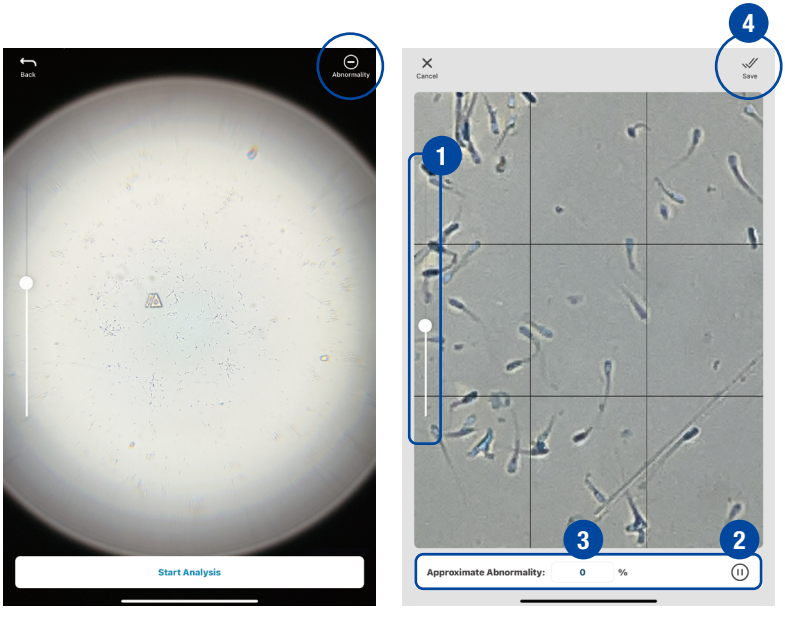


Manual Assessment of Abnormal Morphology

During the “Semen Analysis” step, tap the icon to zoom in to check sperm morphology manually.

Follow the steps:

1. Use the manual focus bar to adjust the focus.
2. Tap the “Pause button” to freeze the image.
3. Fill in the estimated abnormality into the text field.
4. Tap “Save” to leave.



Analysis Result

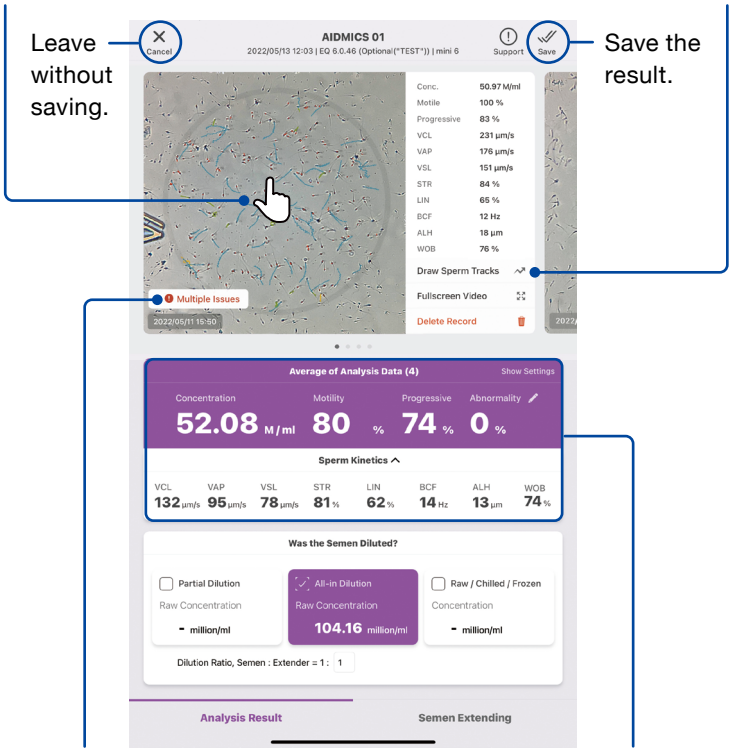
Tap once to stop the video.

Tap twice to view the fullscreen video.

Slide left to view other indices.

Tap tp Draw / Hide Sperm Tracks
Sperm tracks are labeled in 4 colors:

- Progressively Motile
- Motile
- Static
- Late Track



- **Severe impurity. Unable to track sperm correctly.**
- **Large bubbles or debris detected.**
- **Shake detected.**

Concentration, motility, and progressive motility are on the first row.

Detailed kinetics are on the second row.

Semen Extending – 1/5

Step. 1 Was the Semen Diluted?

1 Partial Dilution (Fill in dilution ratio)

Taking a small portion of semen and diluting it with an extender for testing. In most cases, the dilution ratio ranges from 1:5 to 1:10.

Raw Concentration = Measured Concentration * Dilution Ratio

2 All-in Dilution (Fill in dilution ratio)

Dilution of the entire collected raw semen with an extender. In most cases, the dilution ratio is 1:1 or 1:2.

Raw Concentration = Measured Concentration * Dilution Ratio

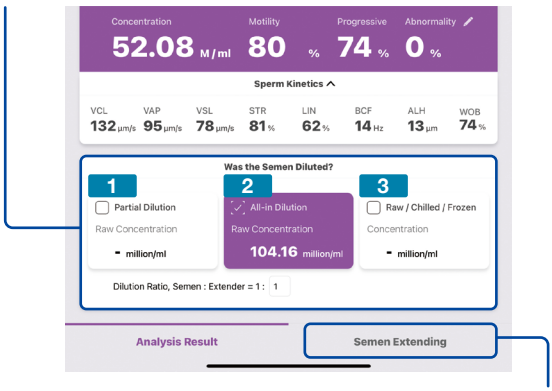
In this case, the dilution ratio is 1:1, with a Measured Concentration of 52.08 M/ml. Therefore, the Raw Concentration will be 104.16 M/ml.

e.g.: 104.16 = 52.08 x (1+1)

3 Raw/Chilled/Frozen

No further dilution is conducted before analysis.

Concentration = Measured Concentration



Tap “Semen Extending” or slide left to go to the Extending page.

Semen Extending – 2/5

The choice made in **Step. 1** will influence the concentration display of “Analysis Result”.

If you choose:

1 Partial Dilution

Concentration = Raw Concentration or pre-analysis diluted concentration

In the case, for instance, the dilution ratio is 1:5, the concentration of “Analysis Result” will be 312.48 M/ml.
e.g.: 312.48 = 52.08 x (1+5)

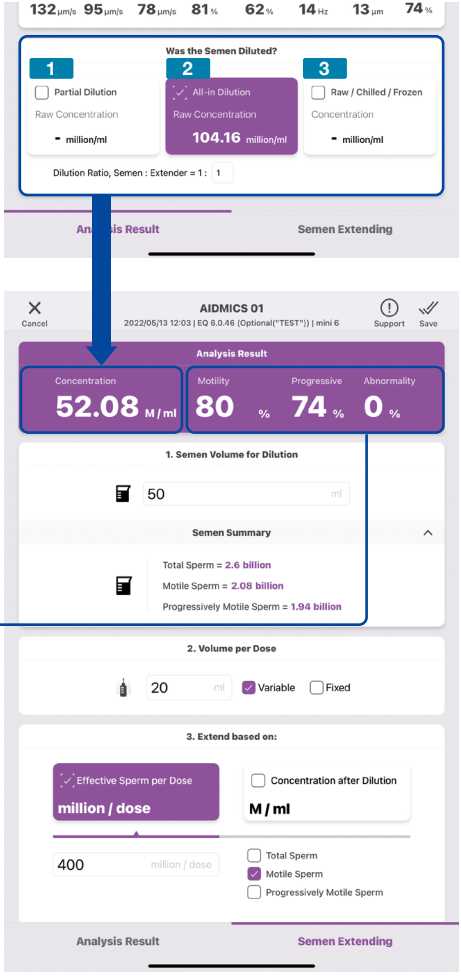
2 All-in Dilution

Concentration = Measured Concentration

3 Raw/Chilled/Frozen

Concentration = Measured Concentration

Motility, Progressive and Abnormality remains the same.



Semen Extending – 3/5

Step. 2-1 Semen Volume for Dilution

If you choose:

1 Partial Dilution

Please fill in the remaining volume available for extending after deducting the portion used for analysis.

2 All-in Dilution

Please fill the total volume of the semen and the added extender.

3 Raw/Chilled/Frozen

Please fill in the volume received.

Semen Summary

This section displays how many sperm are available for extending :

- **Total Sperm**

Total Sperm = Concentration x Semen Volume for Dilution
e.g.: 2.6 billion = 52.08 million x 50 ml

- **Motile Sperm**

Motile Sperm = Total Sperm x Motility(%)
e.g.: 2.08 billion = 2.6 billion x 80%

- **Progressively Motile Sperm**

Progressively Motile Sperm = Total Sperm x Progressive (%)
e.g.: 1.94 billion = 2.6 billion x 74.7%

Semen Extending – 4/5

Step. 2-2 Volume per Dose

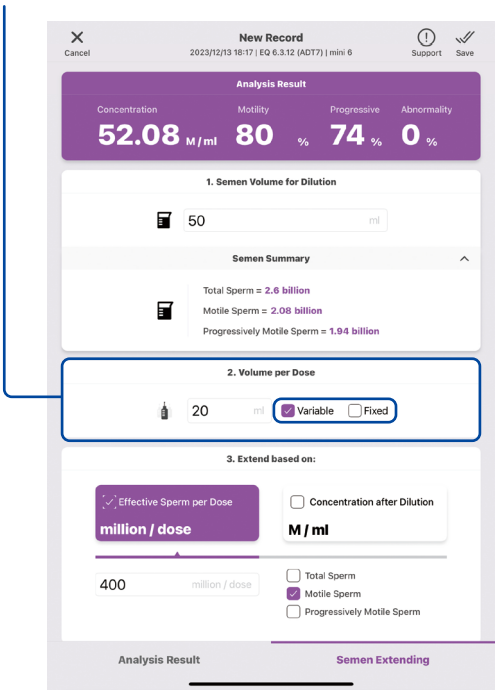
- **Variable**

The container size is flexible (e.g., beakers, syringes).
Allowing iSperm to adjust the dose volume to meet extending standards (set on the **Step. 3**) when semen quality is poor.

- **Fixed**

The container size is fixed (e.g. straws)
iSperm is not allowed to change the dose volume.

When semen quality is good, there is no difference between the two options.



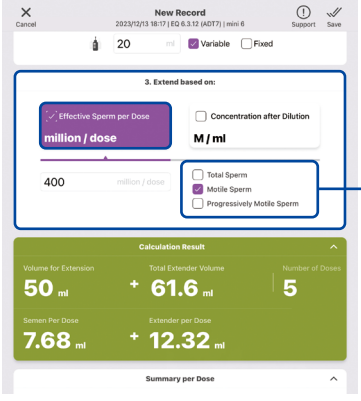
Step. 3 Extend based on

iSperm must follow this standard when extending to ensure the quality of each dose.

• Effective Sperm per Dose

Type-in the required quantity and select the sperm type

In this case, 400 million sperm with motility per dose is needed.
*When there's no progressive motility readings, the option will not be available for selection.

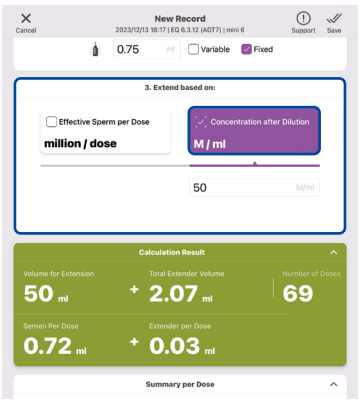


Choose Total, Motile or Progressive Sperms for calculation.

• Concentration after Dilution

Enter the desired concentration for each dose

This value should be lower than the concentration in the “Analysis Result” on top, or the semen sample won’t be extendable. (in cases of low semen concentration)



Calculation Result – 1/4

Calculation Result

- **Volume for Extension**

Volume entered in “1. Semen Volume for Dilution”

- **Total Extender Volume**

The total amount of extender required for extension

Total Extender Volume = Extender Per Dose x Number of Doses

e.g.: 61.6 = 12.32 x 5

- **Number of Doses**

Number of Doses = Total or Motile or Progressively Motile Sperm / Effective Sperm per Dose

e.g.: 5 = 2.08 billion / 400 million

- **Semen Per Dose**

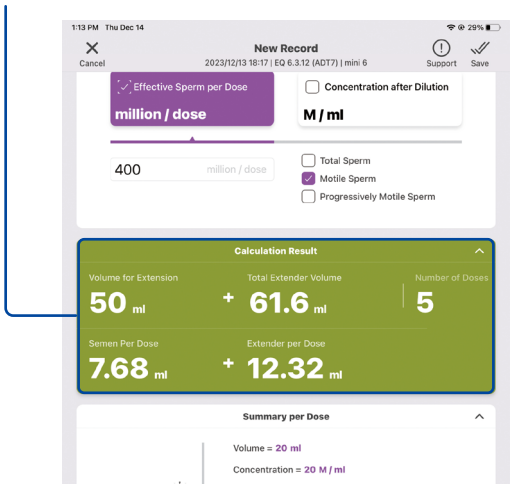
Semen Per Dose = Effective Sperm per Dose / Concentration

e.g.: 7.68 = 400 / 52.08

- **Extender Per Dose**

Extender Per Dose = Volume per Dose - Semen Per Dose

e.g.: 12.32 = 20 - 7.68



Calculation Result – 2/4

The section's color will indicate the quality standard:

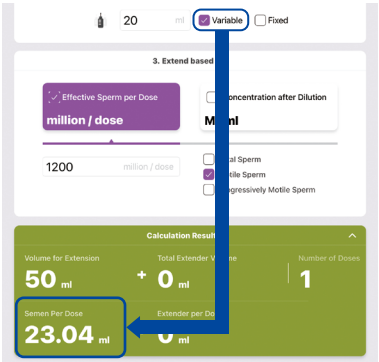
Green: Meets the standard (as per the value entered in “3. Extend based on”)

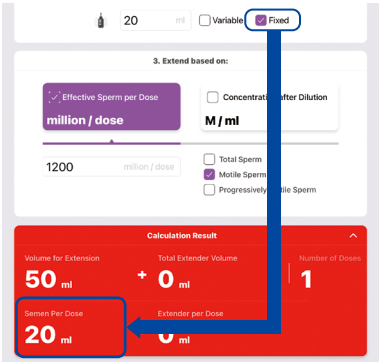
Red: Does not meet the standard

Case 1: Number of Doses > 1 (Able to be divide into multiple doses)

If selected :

- Variable:
  Can be split into doses, be Green.
- Fixed:
  If Semen Per Dose ≤ Volume per Dose, it will be Green; otherwise, it will be Red.

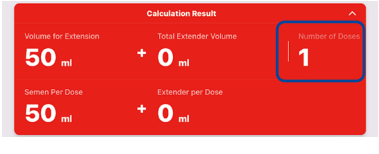


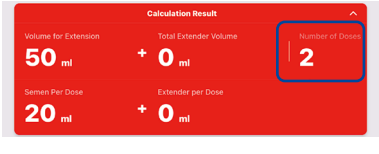


Case 2: Number of Doses < 1 (Unable to obtain even one dose)

If selected:

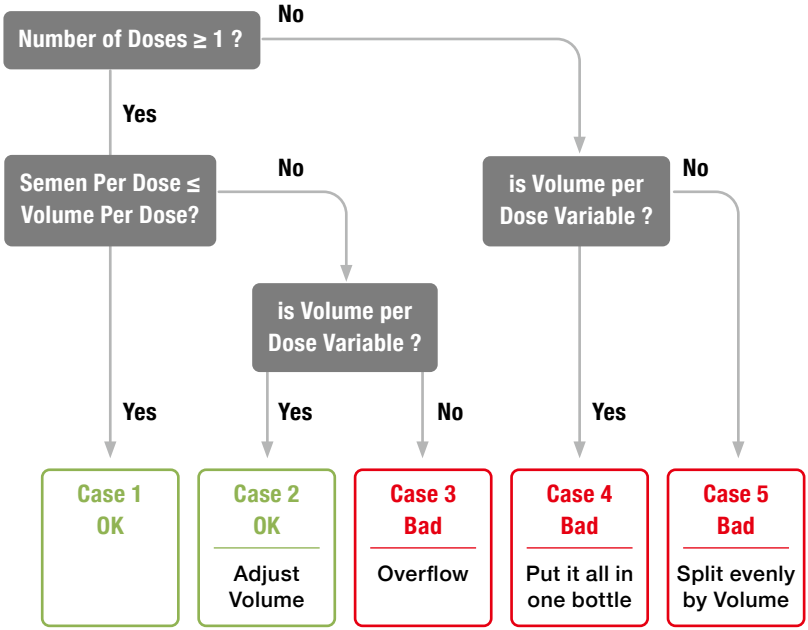
- Variable
  (All packed as one dose)
  Number of Doses = 1
- Fixed
  (Divide evenly)
  $$\text{Number of Doses} = \frac{\text{Volume for Extension}}{\text{Volume per Dose}}$$





Calculation Result – 3/4

Flowchart



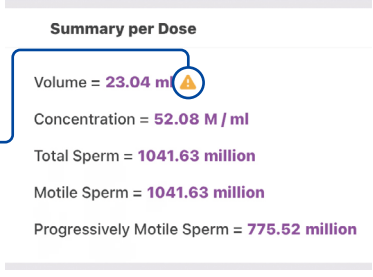
Calculation Result – 4/4

Summary Per Dose

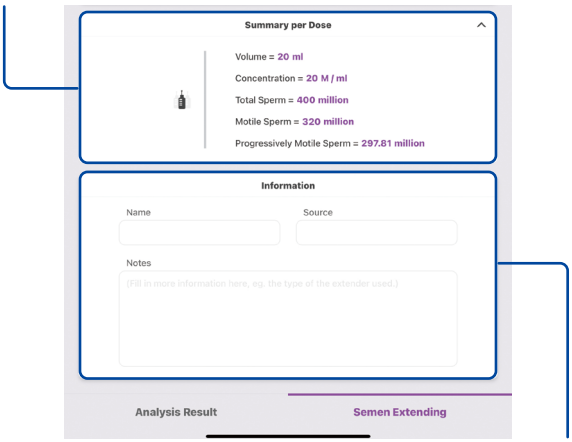
- **Volume: Volume of each dose**

In Section “3. Extend based on”, if “Fixed” is selected, the dose volume should match the entered volume.

If “Variable” is selected and iSperm adjusts the volume, an ⚠ exclamation mark appears. In such cases, please verify whether the readings for each parameter align with Section “3. Extend based on” standards.



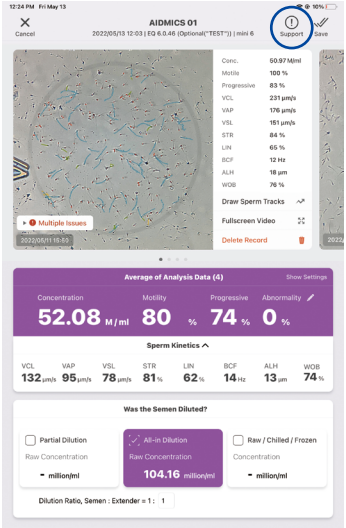
- **Concentration**
- **Total Sperm**
- **Motile Sperm**
- **Progressively Motile Sperm**



Fill in Name, Source and the supplemental information.

Supporting System – 1/4

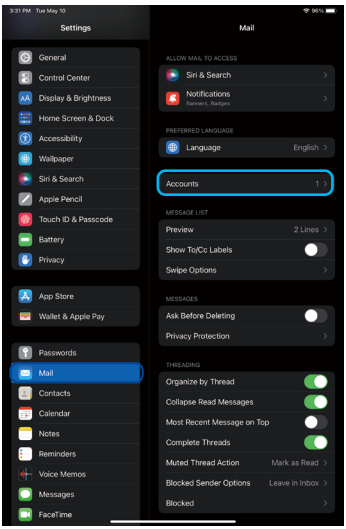
Tap Support to send the data of abnormal measurements via email directly from the iPad. (Please set up the Mail app before using this function.)



Set Up the Mail Apps

If you're been using Mail App on your iPad, please skip to "Supporting System (3/4)".

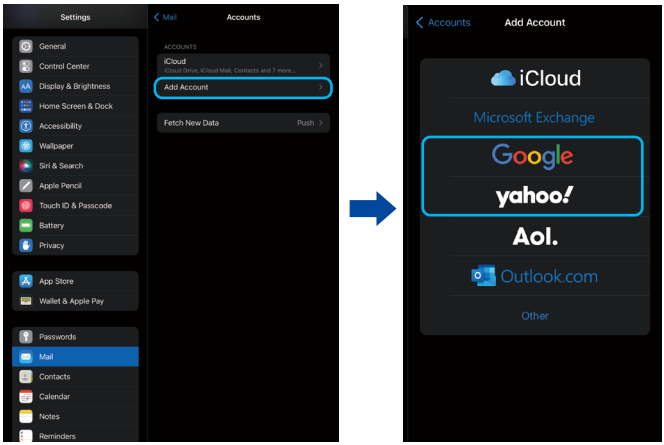
1. Go to "Settings" and Scroll down the sidebar to find the "Mail" and tap "Accounts".



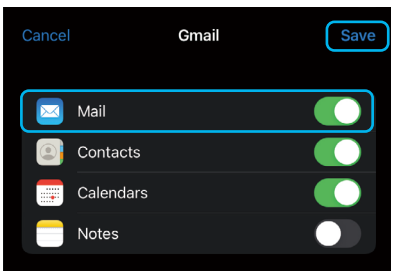
2. Tap “Add Account” and choose the service that you own an account on, such as Google or Yahoo.

   If this is a shared device, we suggest creating a new account for this device. You may follow the guide below to create an iCloud Account:

   https://support.apple.com/guide/icloud/create-an-icloudcom-email-address-mmdd8d1c5c/1.0/icloud/1.0

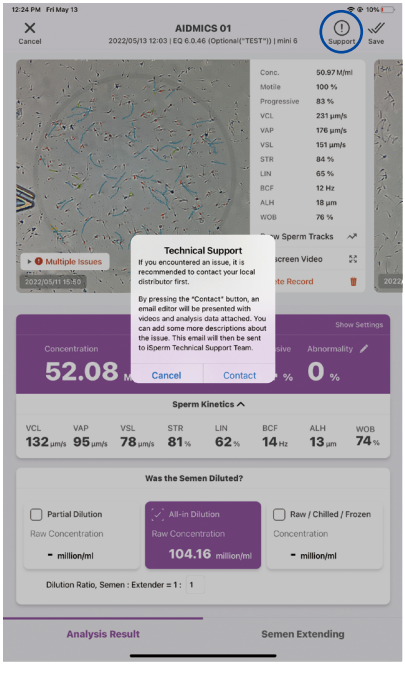


4. After login, please turn on the “Mail” service with this account and click to save.

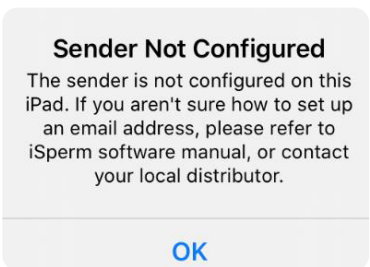


Supporting System – 3/4

1. Tap “Support,” and the required data will be appended to an email draft automatically.



If you see the pop-up on the right, go back to check if the mail sender is ready.

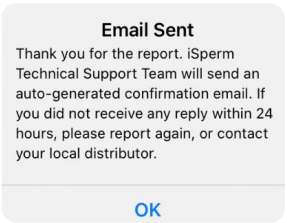


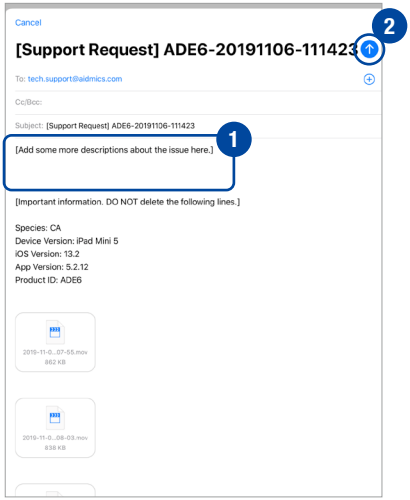
Supporting System – 4/4

2. Please describe the issue and **DO NOT DELETE** any auto-generated information.

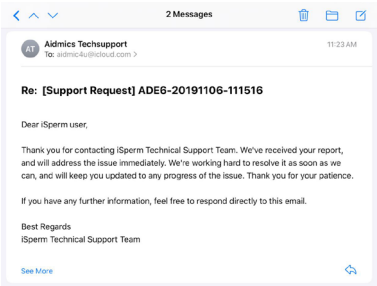
3. Make sure the Internet connection is okay, and tap to send the supporting mails.

   - **The “Email Sent” will pop up after the mail has been sent.**



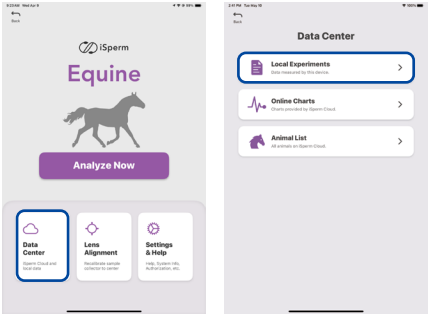


4. After a few minutes, you will receive an auto generated support request mail in the Mail App. Please wait for further technical support.



If you didn’t see the mail, please check your Internet access and report again, or contact your distributor. (Auto-generated emails might be categorized as spam, so please check the spam mailbox as well.)

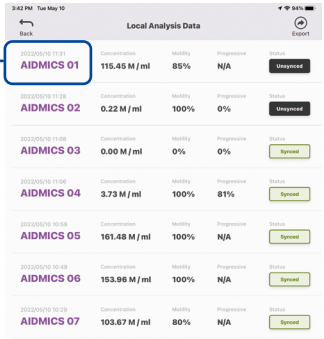
Data Center - Local Experiments



A list of measurement results stored on the local iPad.

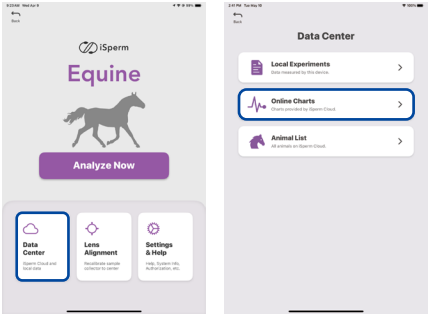
Tap any measurement to view detailed results.

- Videos can be viewed if they are stored during the analysis.
- Only the Animal Name and Source can be edited.



Swipe to the left and tap “Delete” to delete unwanted measurement result.

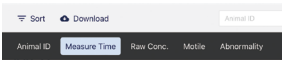
Data Center - Online Charts



A graph helps you to visualize all the measured history.

Tap to change X and Y-Axis.

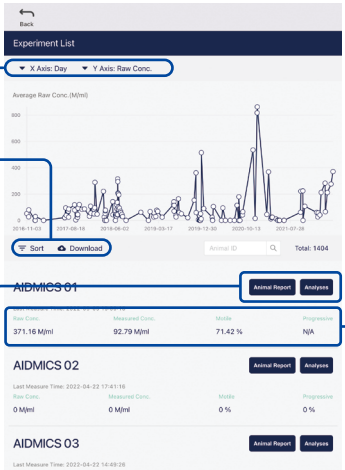
Tap to change Sort.



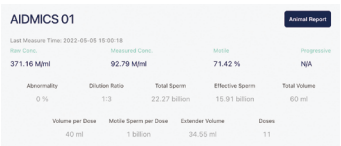
Tap to download Measurement history in Excel format.

Tap Animal Report to view all measurements.

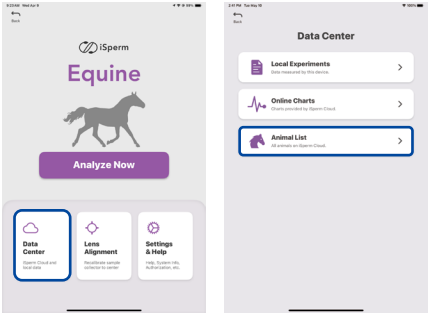
Tap Analyses to see the results of the multi-view analysis.



Tap to view the detailed results.

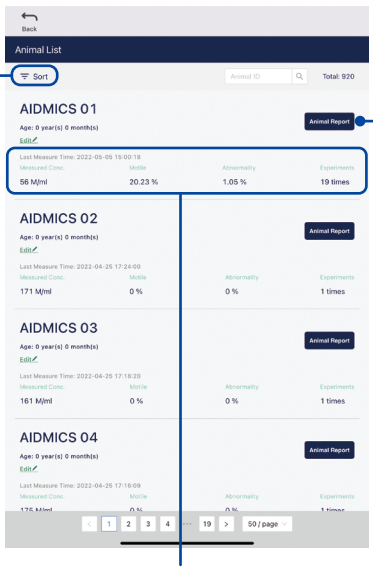


Data Center - Animal List



View measurement history of a specific ID.

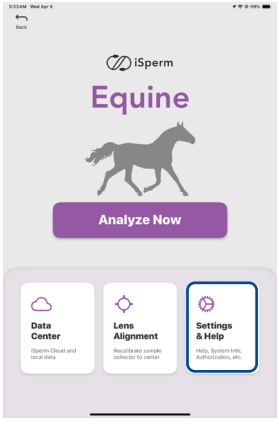
Tap to change Sort.

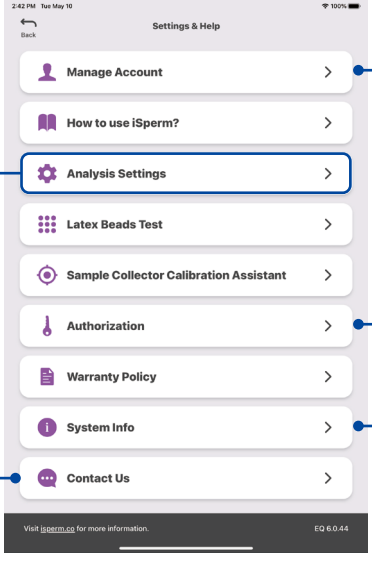


Tap Animal Report to view all measurements.

Data shows the average from all measurements.

Settings & Help – 1/3





Log in/out iSperm Cloud account.

The features of Settings are on the next page.

Owner info; Serial Number;

Information about system and app.

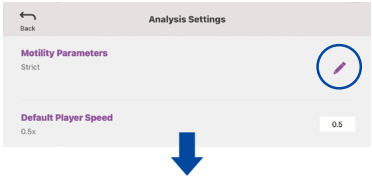
Email & Phone.

Settings & Help – 2/3

Analysis Settings:

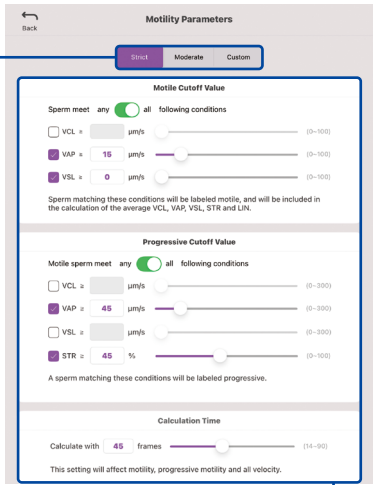
- Motility Parameters
- Default Player Speed

  Set the playback speed for sperm videos. (e.g., 1.0 for normal speed)



• Configuration Profiles:
Select 'Strict', 'Moderate', or 'Custom' to adjust settings, enhancing result comparability with different CASA systems you may have experience with.

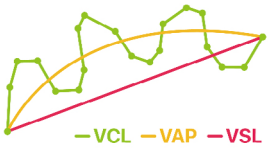
• Recommendations for Comparison
When comparing results with specific CASA systems, we recommend using 'Strict' for Hamilton (IVOS/CEROS) and 'Moderate' for Minitube (AndroVision) to achieve better correlation.



• Customization
Choose 'Custom' for full manual control. Any modification to 'Strict' or 'Moderate' presets will automatically activate 'Custom', highlighting the 'CUSTOM' label.

1. Adjust cutoff values of motile sperm assessment.
2. Adjust cutoff values of progressive sperm assessment.
3. Calculation Time

Definitions



VCL	Curvilinear Velocity (μm/s)
VAP	Average Path Velocity (μm/s)
VSL	Straight Line Velocity (μm/s)
STR	Straightness (VSL/VAP)
LIN	Linearality (VSL/VCL)

VCL (Curvilinear velocity) = The summation of distance between the sperm head positions in each frame / Elapsed time

VAP (Average path velocity) = The averaged path determined by smoothing the position of head / Elapsed time

VSL (Straight line velocity) = Distance between the first and last points / Elapsed time

STR (Straightness) = VSL/VAP in percent(%) is a measure of track compactness.

LIN (Linearity) = VSL/VCL in percent(%) is a measure of track direction.

Latex Beads Test – 1/4

Latex Beads Test helps users to obtain more accurate readings with their iSperm. It will help to

- Check if the sampling process is correctly performed.
- Confirm if an abnormal hardware problem (sample collector, lens, ...) encounters.

For more information about latex beads, please refer to *https://www.hamiltonthorne.com/index.php/accu-beads*

Preparation for Latex Beads Test

1. Familiarize yourself with the "Sampling > Pipette Method" in this manual to proceed with the test.
2. The **recommended concentration** interval for the latex beads solution to be prepared is 10 to 75 M/ml, and the size is 4 µm.
3. 46 M/ml is the deal concentration for the test.
   (Refer to the picture on the right.)

Calibration by Chamber Type		
	For Fixed Coverslip	For Hemocytometer
#1	35 ± 5 M/ml	46 ± 7 M/ml
#2	18 ± 2.5 M/ml	23 ± 4 M/ml
#3	3 ± 1 M/ml	4 ± 1.5 M/ml

Remind:
Refer to the numbers shown on the column "For Hemocytometer" to do the comparision.

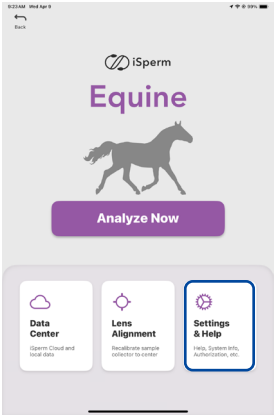
Instructions for Latex Beads Test

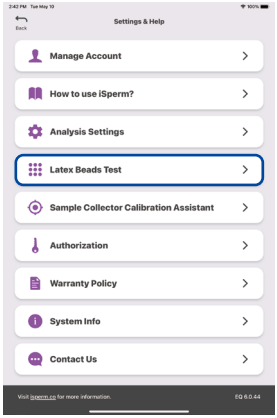
1. Make a sample and count the concentration with the "Latex Beads Test" Mode.
2. Count another aliquot of the beads sample with an iSperm Chip. The results should be within 10% of each other to be considered valid.
3. If the results are valid, average the two concentrations and compare them with the beads' acceptable ranges.
4. Record all results along with pertinent information, such as the person's name performing the procedure.

Latex Beads Test – 2/4

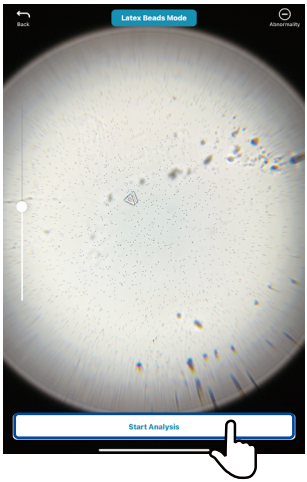
Instructions for Latex Beads Test

1. Open the iSperm app. Go to “Settings & Help” and tap “Latex Beads Test”.



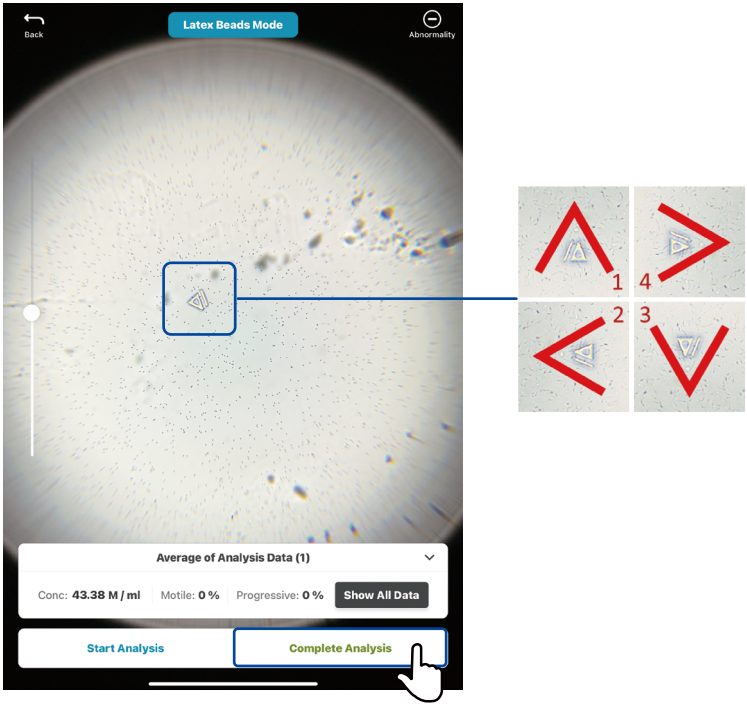


2. Check that the view is OK, and tap “Start Analysis” to start the test.

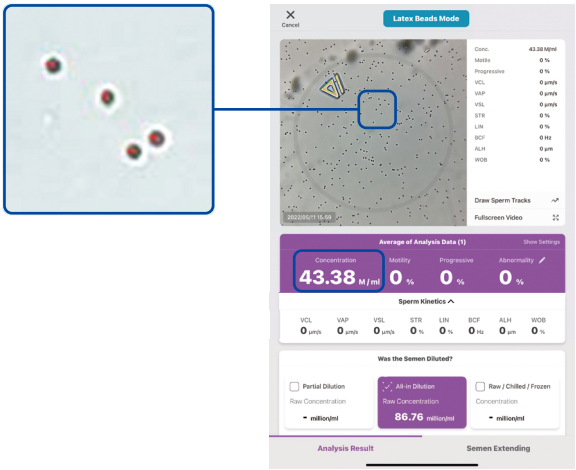


Latex Beads Test – 3/4

3. Use 4-view analysis to obtain the averaged reading by rotating the arrow 90˚ for every measurement **(See 4-view analysis detail in Software > Semen Analysis Section)**, then tap “Complete Analysis” to finish the tests.



4. Toggle to see the beads labeled in red, and the average of the four concentrations.



Concentration too high or too low

Follow Step 4 to see if all the beads are well labeled.

- **If well-labeled**
  - Mixing error: Mix latex beads again for even distribution.
  - Pipetting error: Reload the chip and be careful to avoid overloading the chip or underloading the chip.
  - Confirm the latex beads' concentration using Hemocytometer.
  - Contact the distributor if all the above issues are checked, and the problem still exists.
- **If not well-labeled**
  - It may be caused by lens contamination or abnormal light source. Contact the distributor for further assistance.

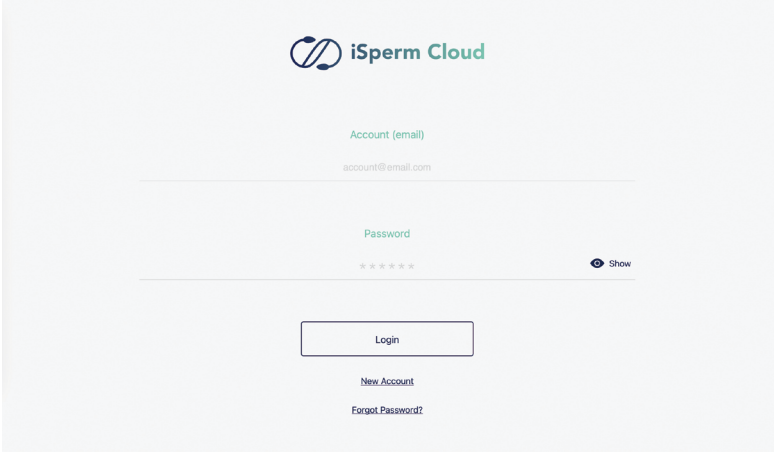
04
Data Backup

- **iSperm Cloud**
  iSperm Cloud allows users to view measurement history using web browsers (Chrome, Safari, etc.) on desktop computers, laptops, and cellular phones.
- **iCloud**
  iSperm App supports a full backup for iPad on iCloud.
  All the videos and data in the iSperm App can be restored if you need to use a new iPad.

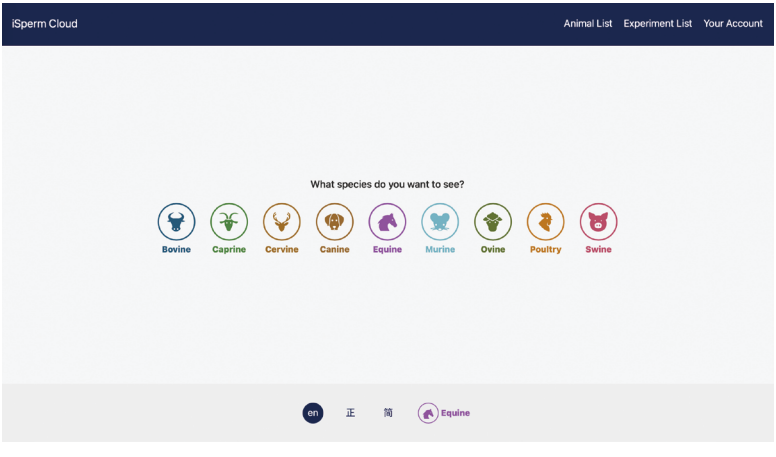
Back to Index

iSperm Cloud – 1/2

1. Login iSperm account at *https://ispermcloud.aidmics.com/*

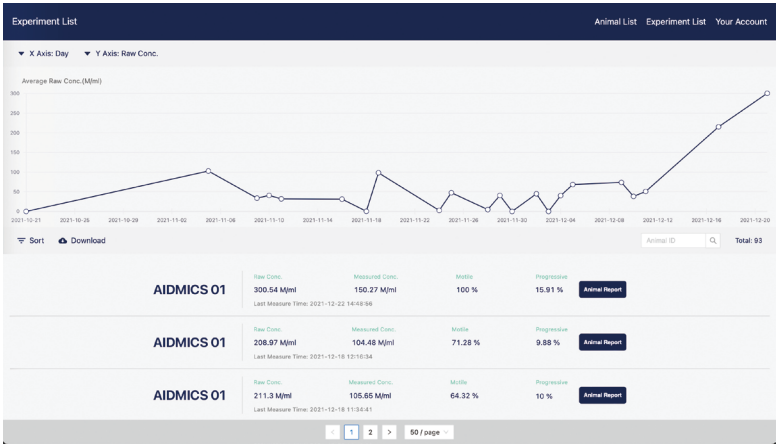


2. Choose animal species.



iSperm Cloud – 2/2

3. All the functions and user interface on the “Data Center” are almost identical to the iSperm App.

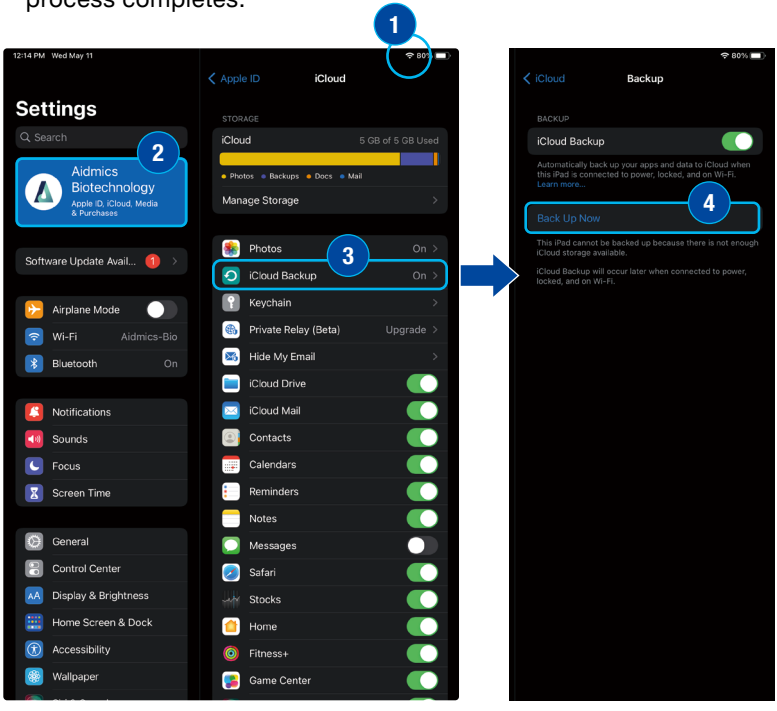


iCloud Backup – 1/2

Before backup, be sure that you have enough space available in iCloud.

When you sign up for iCloud, you will get 5GB of iCloud storage for free. If you need more iCloud storage, you can buy more from your iPad with your Apple ID. Learn more about prices in your region: *https://support.apple.com/kb/ht201238*

1. Connect your device to a Wi-Fi network.
2. Go to Settings > [your name], and tap iCloud.
3. Tap iCloud Backup.
4. Tap Back Up Now. Stay connected to your Wi-Fi network until the process completes.



iCloud Backup – 2/2

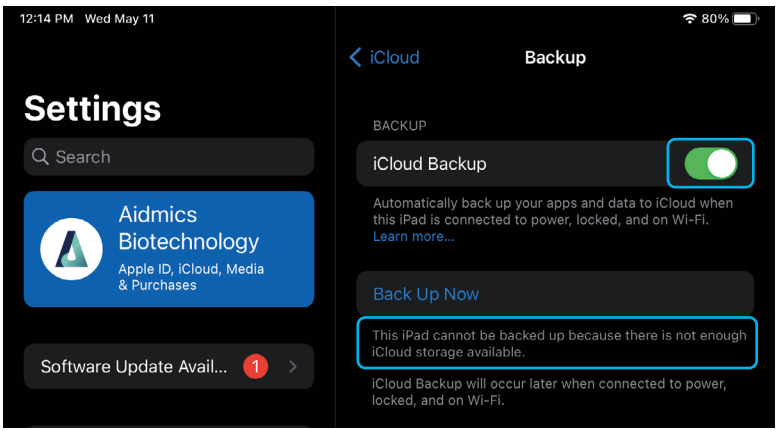
Check the status of the iCloud backup

You can check the progress and confirm if the backup is completed. Go to Settings > [your name] > iCloud > iCloud Backup. Under Back Up Now, you'll see the date and time of your last backup.

Automatically back up with iCloud Backup

To let iCloud automatically back up your device each day, here's what you need to do:

- Make sure that iCloud Backup is turned on in Settings > [your name] > iCloud > iCloud Backup.
- Connect your device to a power source.
- Connect your device to a Wi-Fi network.
- Make sure that your device screen is locked.



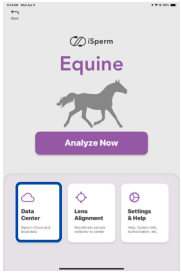
05
Data Transfer

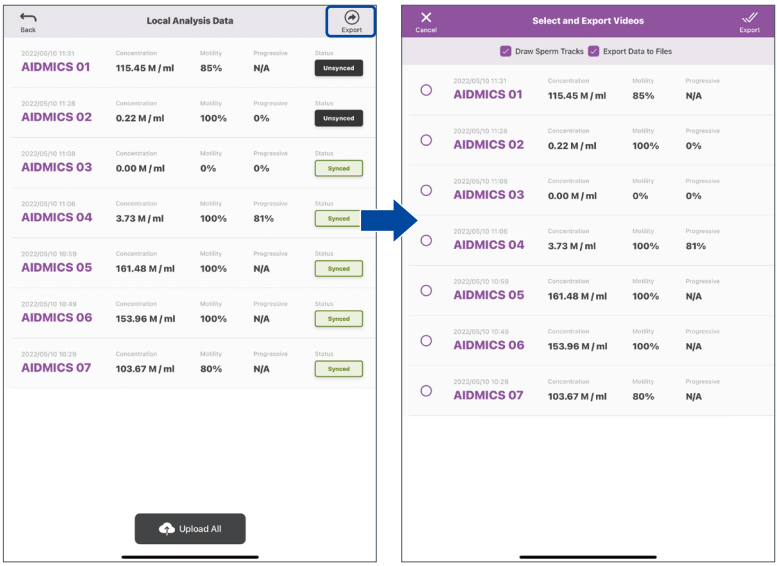
- **Export Videos to Photo App**
  Videos taken on the iSperm app can be exported to Photos App. Each video would come with its respective reading set (concentration, motility, ...) shown underneath the video.
- **Export Data to Files App**
  Export data from iSperm app directly to the Files app on your device.
- **Transfer Data from iPad**
  You can copy videos and measurements between your computer and apps on your iOS device using File Sharing.

Back to Index

Export Videos to Photo App – 1/4

1. Go to Local Experiments.
   Tap the Export Button to
   enter the “Selecting” Mode.





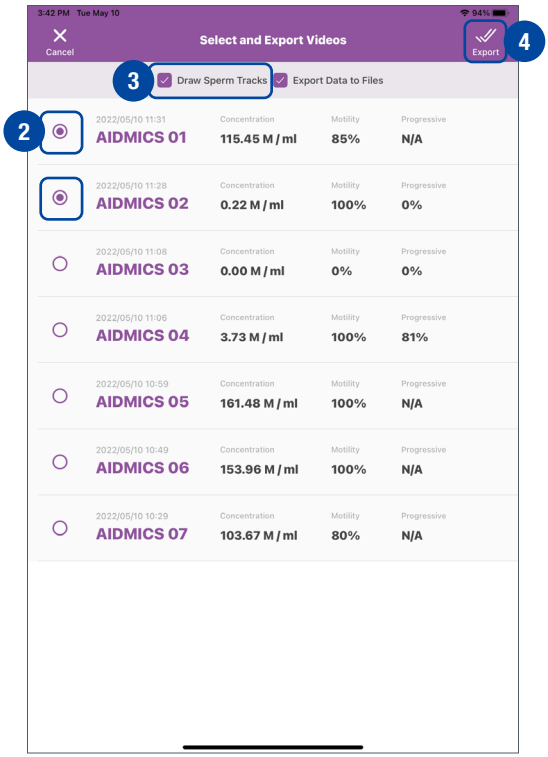
Data Status

Unsynced Unsynced data.

Synced Reading and videos are synced.

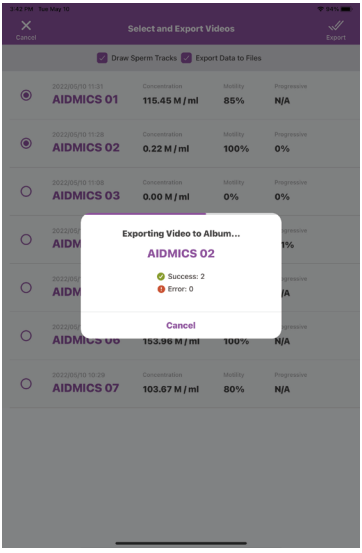
Export Videos to Photo App – 2/4

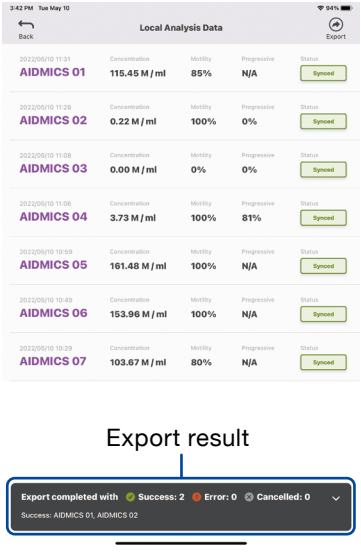
2. Select the measurements you want to output.
3. Check the box if tracks are needed.
   (To see the difference, please refer to “Export Videos to Photo App - 4/4”)
4. Tap the Export button.



Export Videos to Photo App – 3/4

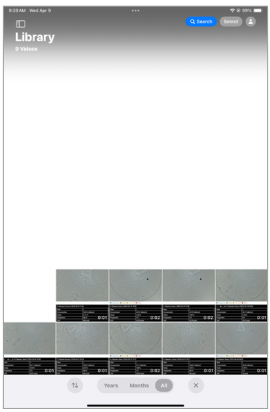
5. Await until all videos are exported.





Export result

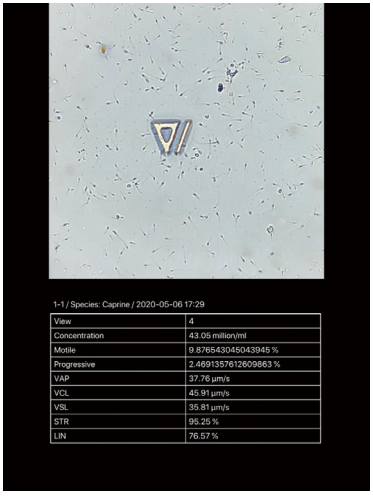
6. Go to Photos App.
   Find the videos (with uneditable readings) to play.



Export Videos to Photo App – 4/4

Videos exported with/without Sperm Tracks

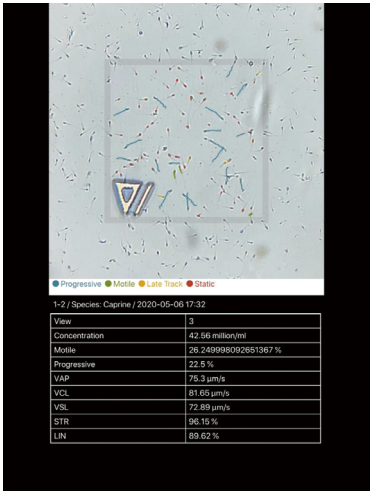
☐ Export Sperm Tracks



1-1 / Species: Caprine / 2020-05-06 17:29

View	4
Concentration	43.05 million/ml
Motile	9.876543045043945 %
Progressive	2.4691357612609863 %
VAP	37.76 µm/s
VCL	45.91 µm/s
VSL	35.81 µm/s
STR	95.25 %
LIN	76.57 %

☑ Export Sperm Tracks

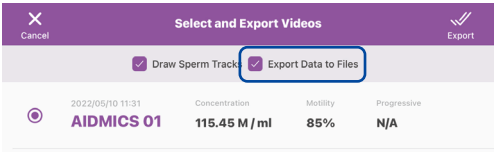


1-2 / Species: Caprine / 2020-05-06 17:32

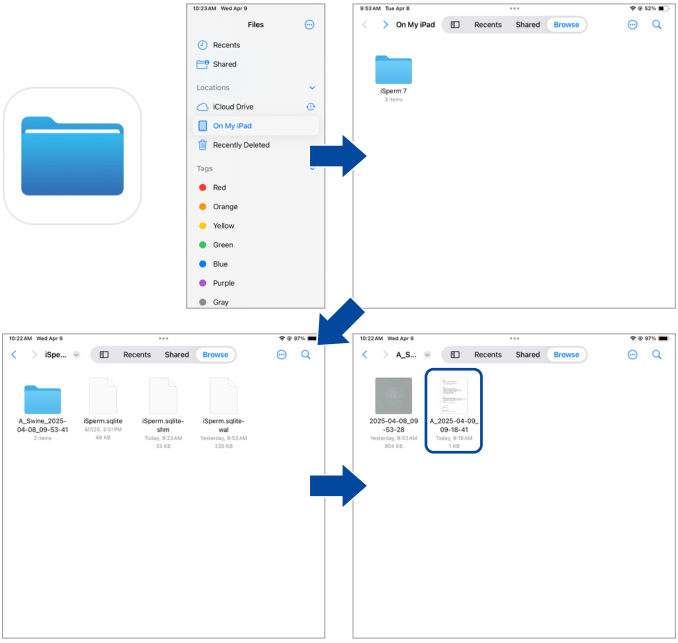
View	3
Concentration	42.56 million/ml
Motile	26.249998092651367 %
Progressive	22.5 %
VAP	75.3 µm/s
VCL	81.65 µm/s
VSL	72.89 µm/s
STR	96.15 %
LIN	89.62 %

Export Data to Files App

1. Check the box to export the video. (Follow the “Export videos to Photo App” step.2~5.)



2. Go to Files App. Tap On My iPad and find the videos and the editable readings.

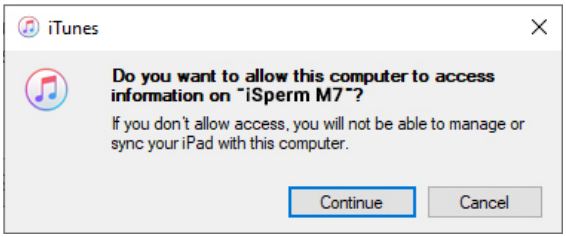


Transfer Data from iPad (iTunes) – 1/3

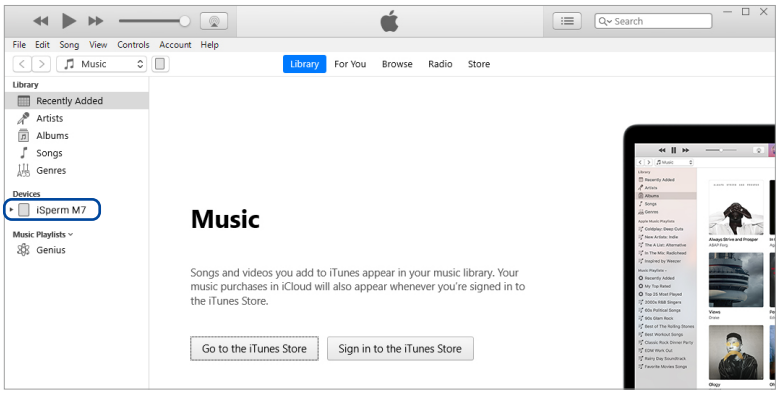
Please refer to the “Transfer Data From iPad (Finder)” if your computer is MacOS Catalina or later.

1. Open iTunes on your Mac or PC.

2. Connect your iPad to your computer using the USB cable that comes with your device. You might see a prompt on the iOS device asking you to Trust This Computer. Tap Trust to continue.

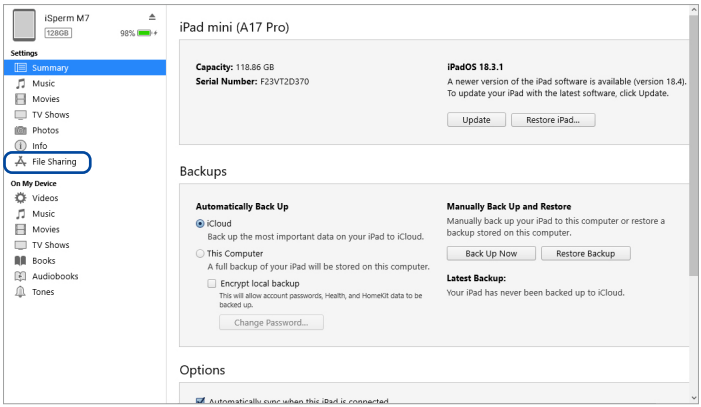


3. Click your device on iTunes.

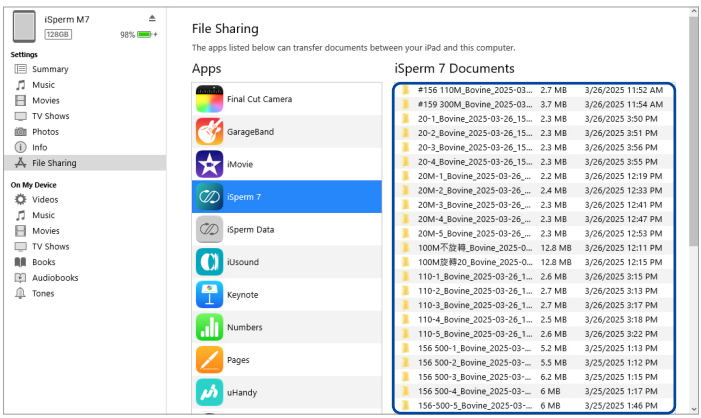


Transfer Data from iPad (iTunes) – 2/3

4. In the left sidebar, click File Sharing.

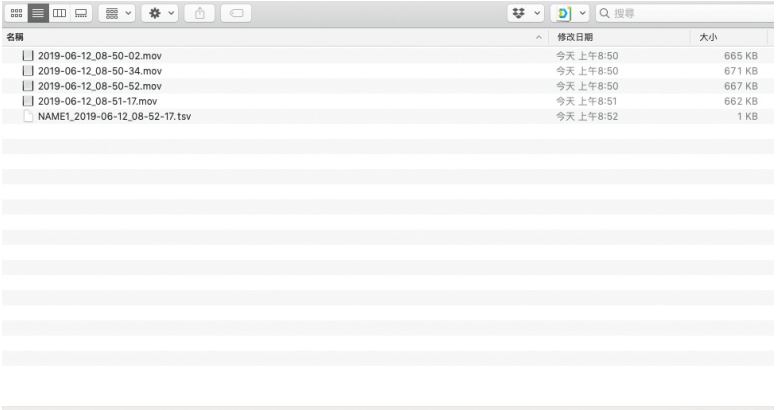


5. Select the iSperm App. Videos are stored in folders for each measurement. The folder name format is **“Name + Species + Date”**. You can save the videos to your Mac or PC.

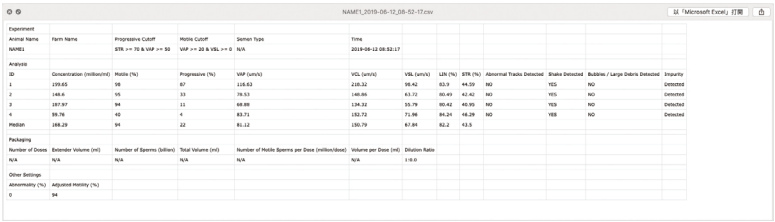


Transfer Data from iPad (iTunes) – 3/3

6. When opening the folder from your Mac or PC, you will see multiple videos (depending on how many views you analyzed) and a “tsv” file that summarizes all the measurements.



名稱	修改日期	大小
2019-06-12_08-50-02.mov	今天 上午8:50	665 KB
2019-06-12_08-50-34.mov	今天 上午8:50	671 KB
2019-06-12_08-50-52.mov	今天 上午8:50	667 KB
2019-06-12_08-51-17.mov	今天 上午8:51	662 KB
NAME1_2019-06-12_08-52-17.tsv	今天 上午8:52	1 KB



NAME1_2019-06-12_08-52-17.csv

Experiment												
Animal Name	Farm Name	Progressive Cutoff	Motile Cutoff	Semen Type	Time							
NAME1		STR >= 70 & VAP >= 50	VAP >= 20 & VSL >= 0	N/A	2019-06-12 08:52:17							
Analysis												
ID	Concentration (million/ml)	Motile (%)	Progressive (%)	VAP (um/s)	VCL (um/s)	VSL (um/s)	LIN (%)	STR (%)	Abnormal Tracks Detected	Shake Detected	Bubbles / Large Debris Detected	Impurity
1	199.65	98	87	116.63	218.32	98.42	83.9	44.59	NO	YES	NO	Detected
2	148.6	95	33	78.53	148.86	63.72	80.49	42.42	NO	YES	NO	Detected
3	187.97	94	11	68.88	134.32	55.79	80.42	40.95	NO	YES	NO	Detected
4	99.76	40	4	83.71	152.72	71.96	84.24	46.29	NO	YES	NO	Detected
Median	168.29	94	22	81.12	150.79	67.84	82.2	43.5				
Packaging												
Number of Doses	Extender Volume (ml)	Number of Sperms (billion)	Total Volume (ml)	Number of Motile Sperms per Dose (million/dose)	Volume per Dose (ml)	Dilution Ratio						
N/A	N/A	N/A	N/A	N/A	N/A	1:0.0						
Other Settings												
Abnormality (%)	Adjusted Motility (%)											
0	94											

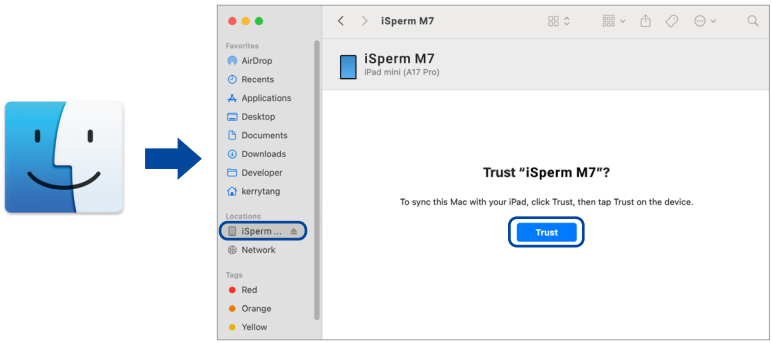
Transfer Data from iPad (Finder) – 1/2

Please refer to the “Transfer Data From iPad (iTunes)” if your computer is PC or MacOS Mojave or earlier.

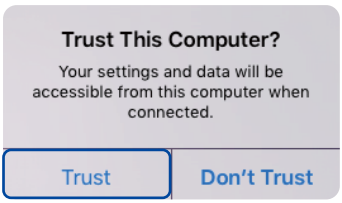
1. Connect your iPad to your computer using the USB cable that comes with your device. Also, make sure that your MacOS Catalina is updated to the newest version.

2. Enter “Finder,” find your iPad in the left sidebar, and click.

3. Click the “Trust” button to connect your iPad mini.

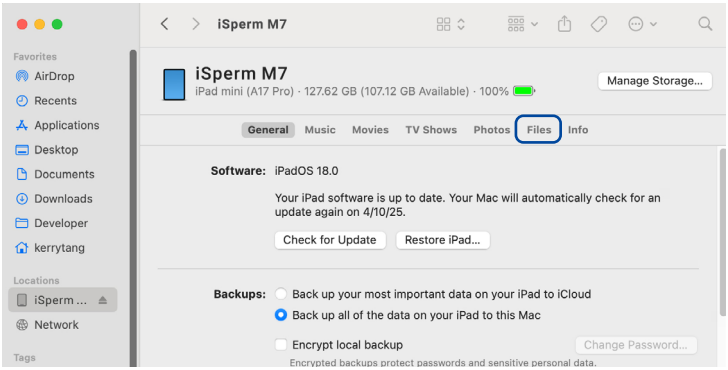


4. You might see a prompt on the iOS device asking you to Trust This Computer. Press Trust to continue.



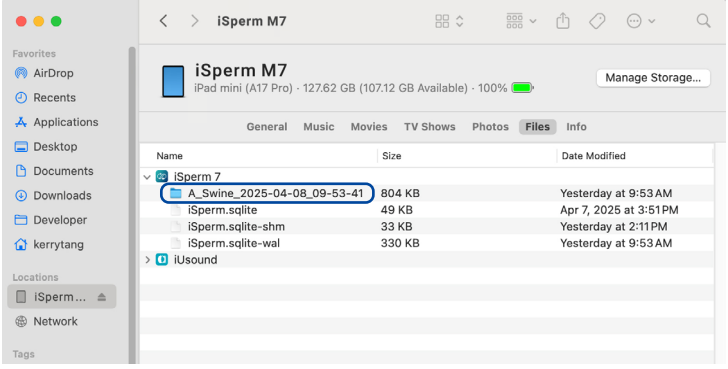
Transfer Data from iPad (Finder) – 2/2

5. Click the “Files” label on the top.



6. Find the iSperm app on the application list, and select all the files under the application.

7. Drag the files into the target folder.



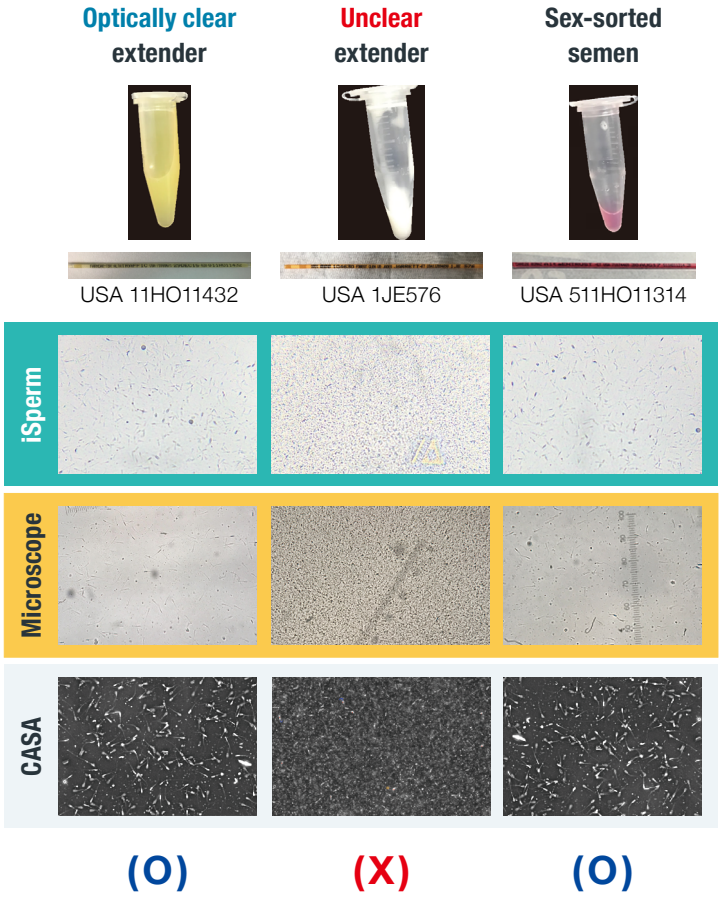
06
Frequently Asked Questions (FAQ)

Back to Index

Can all types of frozen semen be analyzed?

Generally, there are three types of frozen semen.

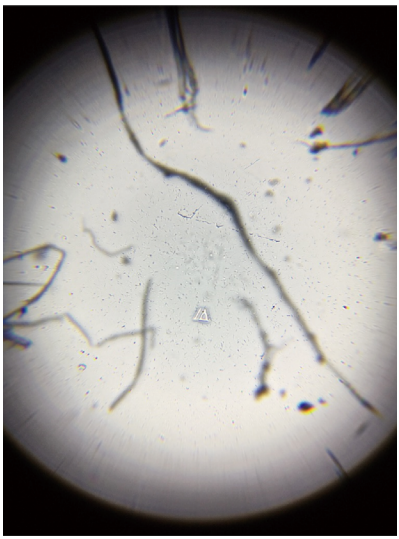
Frozen sample with **unclear** extender **CANNOT** be analyzed by iSperm.



If Cover Chip is contaminated...

- If Cover Chip is contaminated, it is okay to use tissue paper to wipe the cover surface gently.
- It is recommended to keep the table surface, Base Chips, and Cover Chips clean.

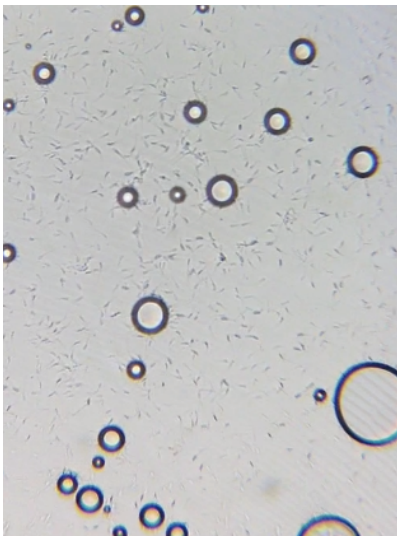
Microscopic view of dust/fiber on the Cover Chip.



If bubbles are visible...

- **Re-sampling** is required if bubbles are visible. (See the picture below, Bubbles hinder the analysis significantly.)
- Bubble trapping is usually associated with the mixing process.
- Mix the semen gently can prevent it from forming bubbles. (It may take some practice to be skilled at bubble-free mixing.)

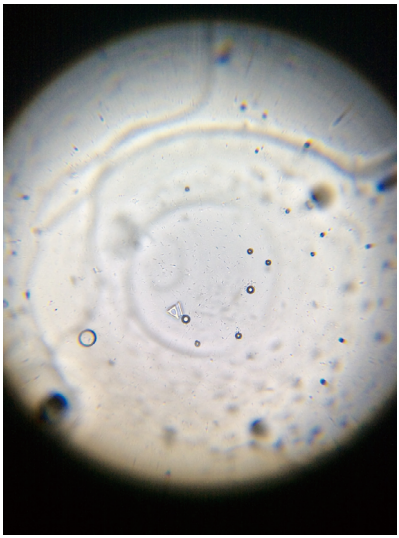
Microscopic view of bubbles.



If image is blurry...

- Check if Base Chip and Collector are intact and locked correctly.
- Check if Sample Collector is locked correctly.
- Check if Cover Chip is clean.
- If the image is blurry in every chip, the lens may have been contaminated.
  Please get in touch with your distributor for technical service.

Microscopic view of blurry image.

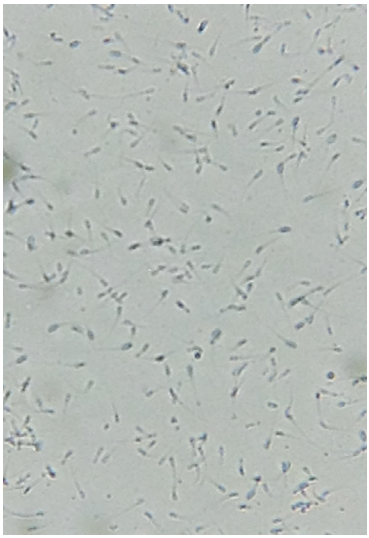


If sperm aren't distinguishable

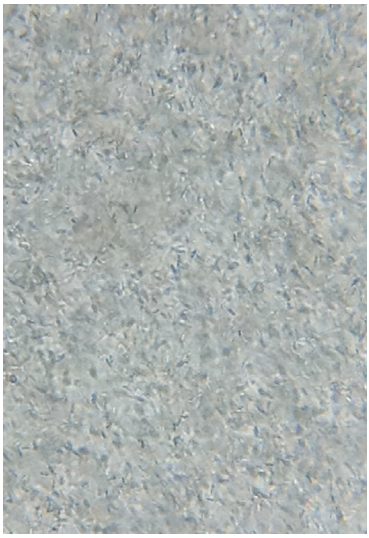
Possibilities:

- Sample could be too concentrated, and further dilution is required.
- Base Chip & Cover Chip aren't locked correctly to enclose a thin layer. It leads to multi-layers of sperm cells instead of a thin layer. In this case, re-sampling is required.

Single layer (O)



Multiple layers (X)

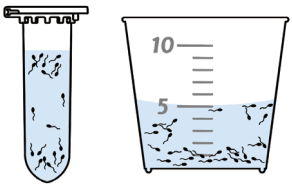


Causes of Variation

Possibilities:

- Mix Semen Uniformly

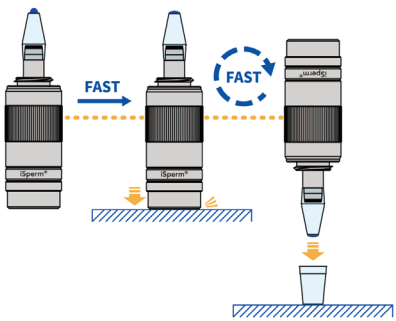
  It is critical to make sure the sperm cells are distributed uniformly. See below examples of non-uniform semen. Further mixing is required.



Mix semen thoroughly before Every sampling.

- Time gap (delay) on Cover-Base Lock-in

  It is important to **lock the Base Chip to the Cover Chip as soon as the sample is attached.** Experiments show that deviation exists with a 10-second time gap.

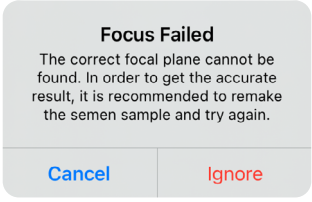


After semen is attached, complete the sampling as soon as possible.

Troubleshooting Focus Failure – 1/4

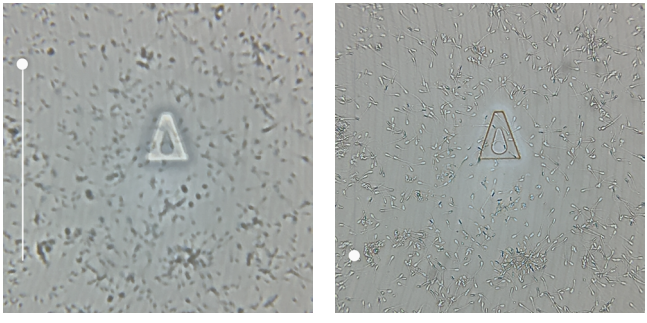
Scenario 1: Autofocus Fails

"Focus Failed" message appears after starting analysis.

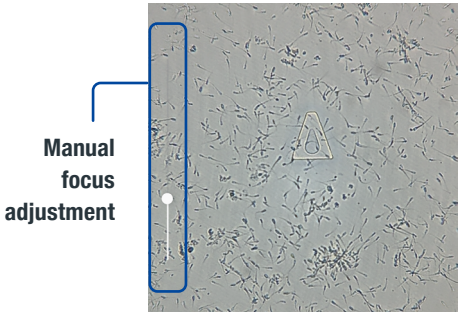


- **Step 1**
  Use the manual focus control to see if you can make the sperm appear sharp and black.

Out of Focus (blurry, indistinct, greyish, or white/haloed).



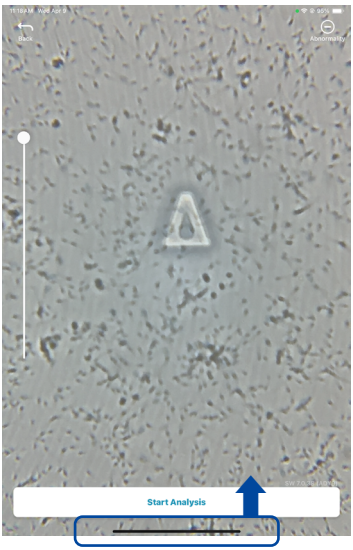
Good Focus (sharp, distinct black sperms).

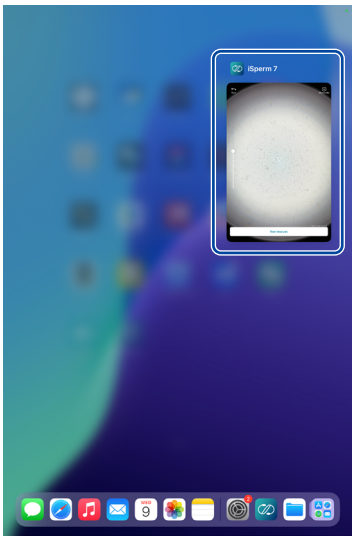


Troubleshooting Focus Failure – 2/4

- **Step 2**
  - If manual focus OK: Restart the iSperm app. This usually fixes temporary software glitches.
  - If manual Focus still blurry/white: Proceed to Scenario 2 to check the physical setup (case fit, sample collector, etc.).

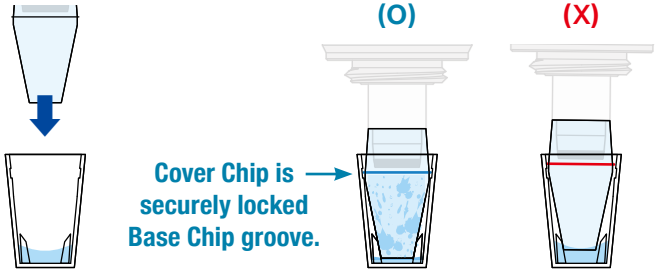
Force close the iSperm app using the App Switcher (swipe up from bottom, then swipe the app up) and reopen it.



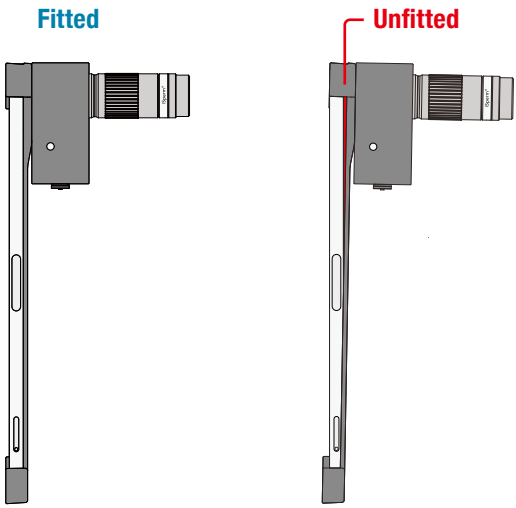


Scenario 2: Focus Cannot Be Achieved

- Check iSperm Chip Assembly: Ensure Base Chip and Cover Chip are properly and fully clipped together. (Observing a tiny amount of liquid splashing or displacement when clipping is normal and confirms a tight seal).

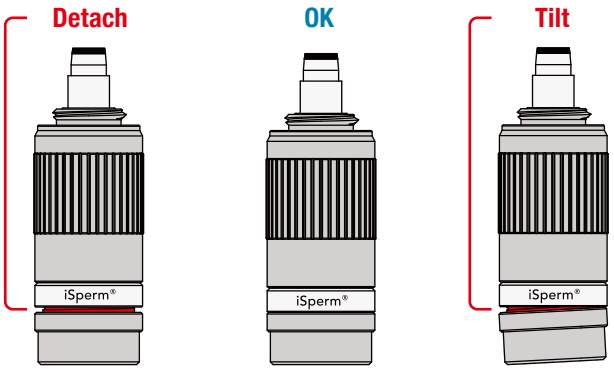


- Check iPad Case Fit: Ensure the iSperm device casing is securely and tightly fitted onto the iPad.

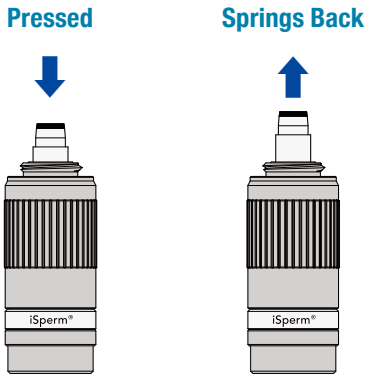


Troubleshooting Focus Failure – 4/4

- Check Sample Collector Lock: Ensure the sample collector is screwed tightly onto the device/case with no gaps.

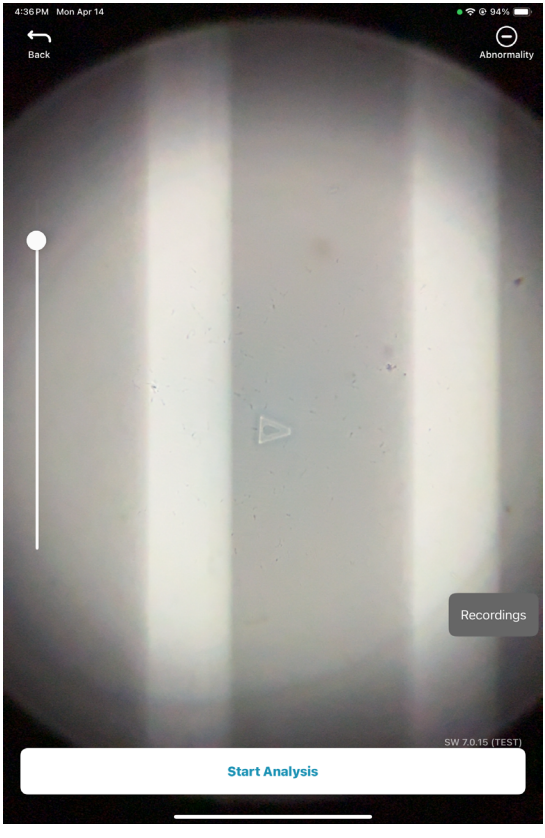


- Check Sample Collector Spring: Ensure the Sample Collector tip springs back smoothly when pressed.



1. Light is Flashing

- This typically indicates low power. Replace the batteries.



Troubleshooting the Sample Collector – 2/3

2. Light Does Not Turn On

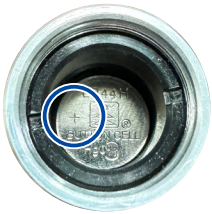
a. Check for Battery Contacts Corrosion: Inspect battery contacts for green/brown corrosion (often from long-term inactivity). If found, gently clean with a cotton swab and isopropyl alcohol. If the issue persists, please contact your distributor for further assistance.

Normal (O)

Corrosion (X)

b. Verify Battery Orientation: Ensure all batteries (e.g., LR44) are inserted with the correct polarity (+ facing up).

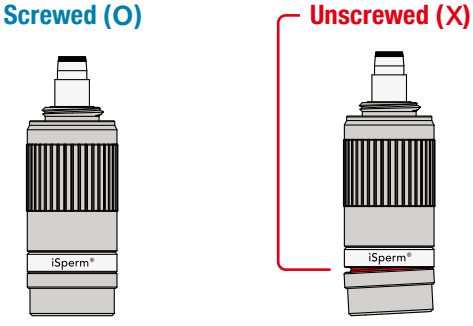
Good (O)



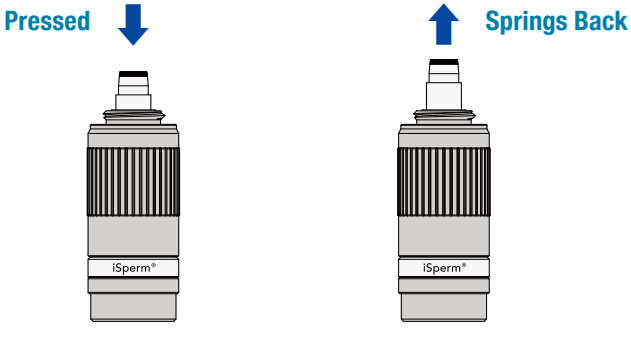
Flipped (X)

Tip: Check each battery individually after insertion, as they can sometimes flip easily.

c. Secure the End Cap: Make sure the battery cap of the Sample Collector is fully and tightly screwed. A loose cap can interrupt power.



d. Check for Contamination: If the spring mechanism feels stiff or doesn't move smoothly when pressing the tip, inspect the Sample Collector tip closely for dirt, liquid, or other contaminants that might be causing the issue.

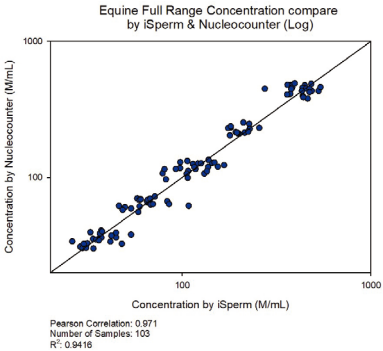


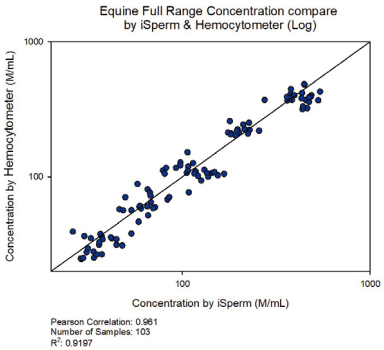
Press the tip to ensure the spring moves smoothly.

07
Validation

Back to Index

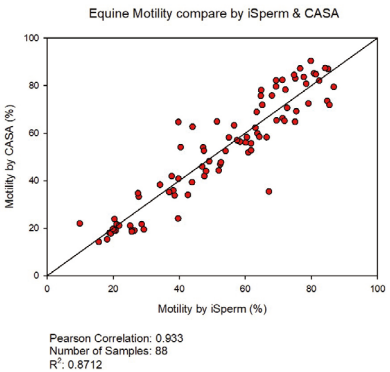
Concentration Validation: iSperm vs. Nucleocounter & Hemocytometer



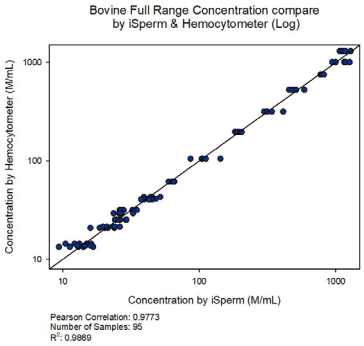


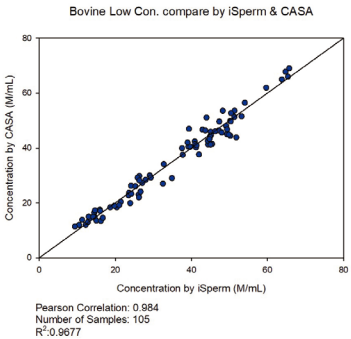
Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.



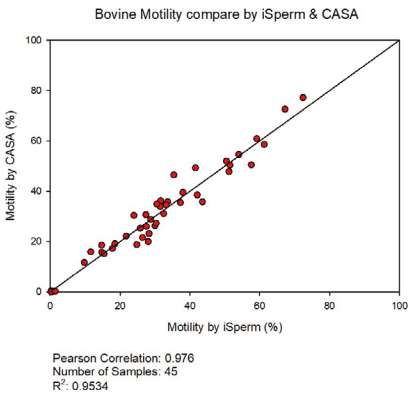
Concentration Validation: iSperm vs. Hemocytometer & CASA



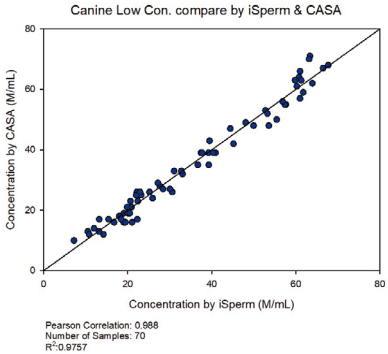


Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.

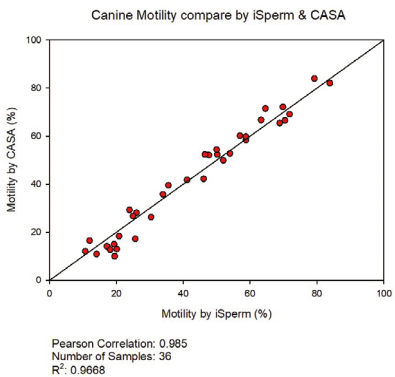


Concentration Validation: iSperm vs. CASA

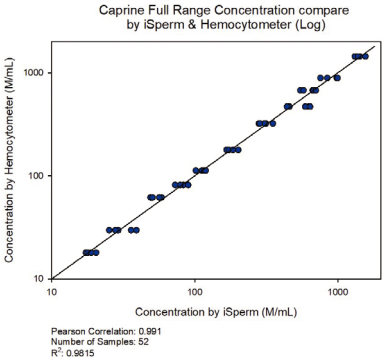


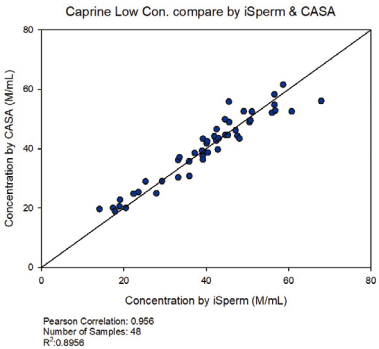
Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.



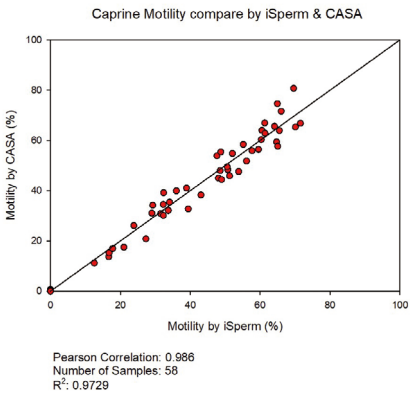
Concentration Validation: iSperm vs. Hemocytometer & CASA



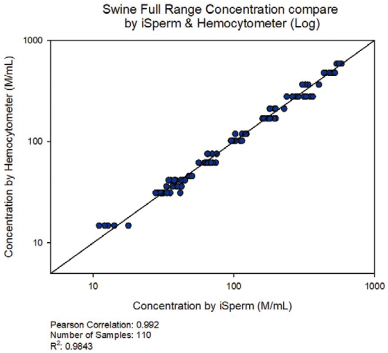


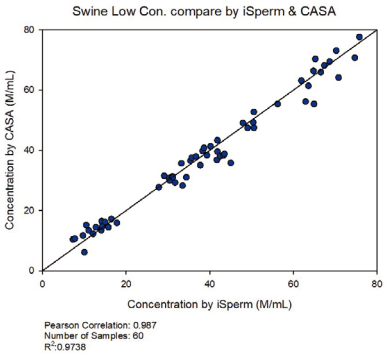
Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.



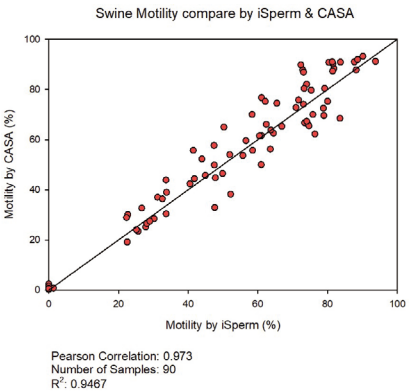
Concentration Validation: iSperm vs. Hemocytometer & CASA



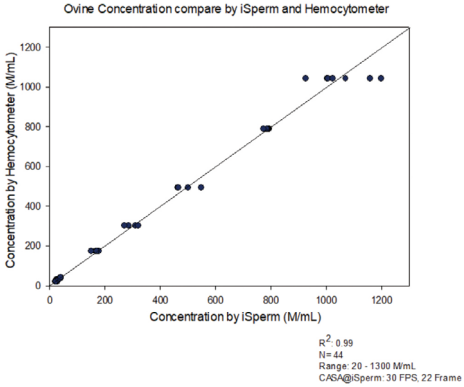


Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.

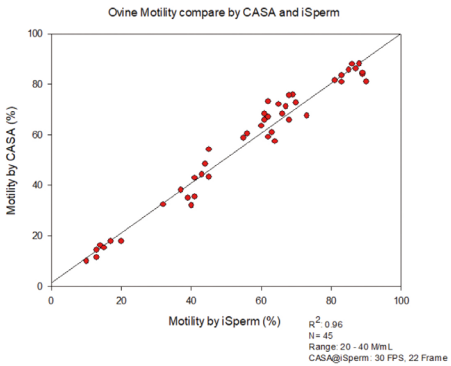


Concentration Validation: iSperm vs. Hemocytometer



Motility Validation: iSperm vs. CASA

The motility is compared at concentraton of 20-60M/ml.



08
Certificates

Back to Index

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

Certificate of Compliance

No. 0L160311.AB0S58

Technical Construction File no. AID-2016001-A1

Certificate's Holder:	Aidmics Biotechnology Co., Ltd. Rm. 1, 11F., No.171, Sec. 3, Roosevelt Rd., Da'an Dist., Taipei City 106, Taiwan (R.O.C.)
Certification ECM Mark:	Type Approved
Product:	Sperm Analyzer
Model(s):	ADBISP
Verification to:	Standard: EN 61000-6-2:2005/AC:2005, EN 61000-6-4:2007/A1:2011, EN 61000-4-2:2009, EN 61000-4-3:2010, EN 61000-4-8:2010 related to CE Directive(s): 2014/30/EU (Electromagnetic Compatibility)

Remark: The product(s) has been verified on a voluntary basis. The product(s) satisfies the requirements of the Certification Mark of ECM, in reference to the above listed Standard(s). The above Compliance Mark can be affixed on the product(s) accordingly to the ECM regulation about its release and its use. The regulation can be found at www.entecerma.it. This Certificate of Compliance can be checked for validity at www.entecerma.it
This verification doesn't imply assessment of the production of the product(s).

Additional information, clarification about the CE Marking:

We attest that a TCF for the CE Marking process is in place. Whereas the Manufacturer is Responsible to start the CE *Marking Certification Procedure* and to perform all the necessary activities, as required by the Directive before placing the CE Mark on the product(s).

Date of issue 11 March 2016

Chief Manager
Tim Mahan

Expiry date 10 March 2021

Deputy Manager
Viola Miller

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌍 www.entecerma.it

CERTIFICATION

Applicant	:	Aidmics Biotechnology Co., Ltd.
Address	:	Rm.1, 11F., No.171, Sec.3, Roosevelt Rd., Da'an Dist., Taipei City 106, Taiwan (R.O.C.)
Manufacturer	:	Aidmics Biotechnology Co., Ltd.
Address	:	Rm.1, 11F., No.171, Sec.3, Roosevelt Rd., Da'an Dist., Taipei City 106, Taiwan (R.O.C.)
Description of EUT	:	Sperm Analyzer
Trade Name	:	N/A
Model Number	:	ADBISP
Product Series	:	N/A
Type of Test	:	FCC Part 15 Subpart B
Technical Standard	:	**Emission** FCC Part 15：Subpart B Class A CISPR 22：2008 Class A
Report Number	:	HA160126-FD
Receipt Date	:	24-FEB-2016
Issue Date	:	08-MAR-2016
Test Result	:	**Compliance**

The above equipment was tested by *HongAn TECHNOLOGY CO., LTD.* , for compliance with the requirement set forth in the FCC Rules and Regulation Part 15, Subpart B and the measurement procedures were based on ANSI C63.4.

Note ：
1. The results of the test report relate only to the sample tested.
2. The test report shall not be reproduced without the written approval of *HongAn TECHNOLOGY CO., LTD.*

Approved by: Adam Yang

Adam Yang / Section Manager

HongAn TECHNOLOGY CO., LTD.
NO.15-1, CWEISHUH KENG, CWEIPIN VILLAGE,
LINKOU DIST, NEW TAIPEI CITY, TAIWAN, R.O.C.

TEL：+886-2-26030362
FAX：+886-2-26019259
E-mail：hatlab@ms19.hinet.net

BSMI Registration No.：SL2-IN-E-0023,SL2-IS-E-0023, SL2-A1-E-0023,SL2-R1-E-0023, SL2-R2-E-0023,SL2-L1-E-0023

FCC Designation No.：TW1071, TW1163
TAF Accreditation No.：1163
VCCI Registration No.：R-2156, C-2329, T-219, G-696

Fiscal Year 2018

CERTIFICATE OF REGISTRATION

This certifies that:

AIDMICS BIOTECHNOLOGY CO. LTD.
11F.-1, No.171, Sec. 3, Roosevelt Rd., Da an Dist. Taipei, Taipei - Special Municipality, 1067, TAIWAN

has completed the FDA Establishment Registration and Device Listing with the US Food & Drug Administration, through UCL-REG SERVICE INC.

Owner/Operator Number: 10056868

Listing No.	Product Code:	Device Name:
D314278	MTX	MICROSCOPE AND MICROSCOPE ACCESSORIES,REPRODUCTION,ASSISTED

UCL-REG SERVICE INC. will confirm that such registration remains effective upon request and presentation of this certificate until the end of the calendar year stated above, unless said registration is terminated after issuance of this certificate. UCL-REG SERVICE INC. makes no other representations or warranties, nor does this certificate make any representations or warranties to any person or entity other than the named certificate holder, for whose sole benefit it is issued. This certificate does not denote endorsement or approval of the certificate-holder's device or establishment by the U.S. Food and Drug Administration. UCL-REG SERVICE INC. assumes no liability to any person or entity in connection with the foregoing.

Pursuant to 21 CFR 807.39, " Registration of a device establishment or assignment of a registration number does not in any way denote approval of the establishment or its products. Any representation that creates an impression of official approval because of registration or possession of a registration number is misleading and constitutes misbranding."

The U.S.Food and Drug Administration does not issue a certificate of registration, nor does the U.S Food and Drug Administration recognize a certificate of registration. UCL-REG SERVICE INC. is not affiliated with the U.S. Food and Drug Administration.

For and on behalf of
UCL-REG SERVICE INC.

Authorized Signature(s)

UCL-REGSERVICE INC.
602 ROCKWOOD ROAD,WILMINGTON,
NEW CASTLE DE 19802 USA

Cert. No.: M18204
Issued Date: 27 March 2018
Expiration Date: 31 December 2018

Aidmics Biotechnology

www.aidmics.com
service@aidmics.com