



Smart Technology For Life.

CASA  
Computer  
Assisted Semen Analysis





# SPERMOLYZER

Computer Assisted Semen Analysis utilizes latest technology of machine vision and image processing techniques for the clinical assessment of sperm motility , morphology, vitality and DNA fragmentation.

Based on the sperm test standards of the WHO 5<sup>th</sup> criteria (2010), the system can analyze the characteristics of the sperm comprehensively and generates accurate parameters to show sperms' quality. The whole procedure is fast and provides several and important information that are vital to current scientific basis for the male reproductive ability.



*what's new?*

MiraLab introduces the all new and innovative Spermolyzer<sup>®</sup> microscope. Creative head with built-in digital camera & temperature controller.



Innovative microscope

## SPERMOLYZER<sup>®</sup>

Spermolyzer is the world's most advanced, reliable and cost effective CASA. Fast, accurate and objective results for sperm analysis can be obtained for any Pathology and Andrology laboratories.



- \* All in one solution.
- \* Reliable, accurate, homogeneous and objective results.
- \* Powerful yet flexible.
- \* Fast, easy and intuitive user interface.

Main Modules:

- \* Count and Motility
- \* Morphology
- \* Vitality
- \* DNA Fragmentation

- \* Follows WHO 5th edition strict criteria.
- \* Automatic comment generating according to the results.
- \* Creative constant-temperature operation desk
- \* handy on-screen virtual grid function
- \* Robust database with incremental backup and restore.
- \* Generating of historical report.
- \* Stats for researchers and institutions.
- \* Option for making a soft copy of the patient reports along with motility tracks and images.
- \* Very easy and only one-time calibration.
- \* Customized reports with custom colors
- \* Multi user system with different level of privileges.
- \* Multilingual interface (English, French, Italian, Russian, Chinese...etc)



### NO COST PER TEST FOR MOTILITY MODULE

Spermolyzer Metal Slide is a reusable single chamber to analyze Sperm Concentration and Quantitative assessment of Sperm Motility.

# Main Modules:

## Motility

- \* Motility for different velocities and kinematic parameters (VCL, VSL, VAP, MAD, ALH, BCF, LIN, WOB, STR).
- \* Ability to delete non sperm detected objects.
- \* Compatible with reusable and disposable slides.
- \* Smart analysis for detecting irregular movement of sperms.
- \* Multi selection/deselection of objects for accurate results.
- \* Automatic threshold detection to easily catch all sperms in a given track.
- \* Option to print two track images in report

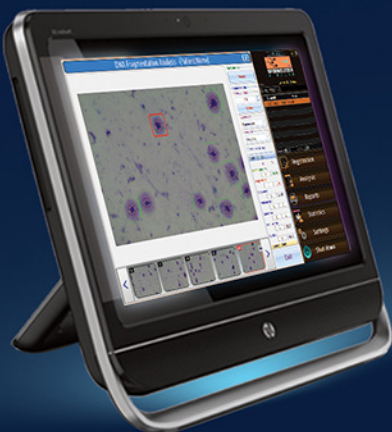


## Morphology

- \* Auto detection of head and neck defects
- \* Morphological and morphometric parameters.
- \* Auto calculation of the important TZI, SDI and MAI indices.
- \* Ability to add, delete and edit sperm vertices easily and interactively.
- \* Showing all sperm properties (shape and size).
- \* Option to print up to 4 images in report along with images of defect/normal sperms.

## Vitality

- \* Easy and cost effective staining.
- \* Using bright field microscope.
- \* Fast analysis with the ability to add, delete and edit any object detected.
- \* Option to print two images in report.



## DNA Fragmentation:

- \* Using the SCD (Sperm Chromatin Dispersion) method.
- \* Fast analysis with the ability to add, delete and edit any object detected.
- \* Classification of sperms according to halo size.
- \* Calculation of the important DFI parameter.
- \* Option to print two images in report.

## Other Features of Spermolyzer software:

- Automatic interpretation and generating of appropriate comments according to the patient results.
- Generating of custom reports like Urine, Stool, CBC and Bone marrow with any captured images using the system digital camera and microscope.
- Burn soft-copy of patients reports along with free track of live spermatozoa.



## MiraLab Andrology Line:

Andrology lab workflow will be far easy and practical with the help of the specifically developed instruments and accessories for all sperm function tests with regards to their functional and ergonomic needs. The instruments are developed with the in-vivo temperature environment of natural processes in mind where ever needed giving systematic approach and quality results.



### Warmer for semen specimen:

Semen specimen warmer is a temperature control system which is ergonomically designed to give ease of work and specimen handling. The system has heater & sensor programmed to attain & maintain 37°C. It has very high accuracy with  $\pm 0.20\text{C}$ .



### Warmer for DNA Fragmentation Test.:

DNA fragmentation test warmer is a dual temperature control system, designed to expose the agarose tubes at 70°C or at 37°C in separate blocks of instrument. The two blocks for two different temperatures can be used simultaneously.

You can thereby cut off the hassle included in conventional method and do the work in ease in just one instrument. Also, its ergonomics allows user to handle each tube without disturbing others.



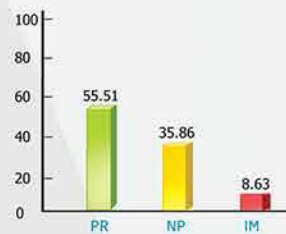
## Spermolyzer (Computer Assisted Semen Analysis)

The system follows WHO (2010) strict criteria for motility patterns & morphometric assessment of human semen.

Name	Patient Name	Case no.	201711022	
Age	35	Date	02/11/2017	
Lab ID	117	Ref. by		

### Physical Properties

Abstinence	4	2 - 5 days
Collection	Masturbation at lab	
Volume	4	$\geq 1.5$ ml
pH	7	$\geq 7.2$
Color	Grey Opalescent	
Odor	Normal	
Viscosity	Moderate	
Liquefaction time	25	15 - 60 min.
Liquefaction State	Complete	



### Test Result

Test	Result	Reference values
Concentration	96.44	$\geq 15$ million/ml
Total sperm count	385.76	$\geq 39$ million/ejaculate
Progressive motility (PR)	55.51	$\geq 32$ %
Totale motility (PR+NP)	91.37	$\geq 40$ %
Morphology index	57.14	$\geq 4$ %
Vitality	72.22	$\geq 58$ %

### Agglutination grade

Agglutination	Nil
Agglutination grade	-
Non-specific Aggregation	Nil

### Other Cells

White blood cells	< 5 /H.P.F
Red blood cells	< 5 /H.P.F
Spermatogenic cells	/HPF
Epithelial cells	/HPF

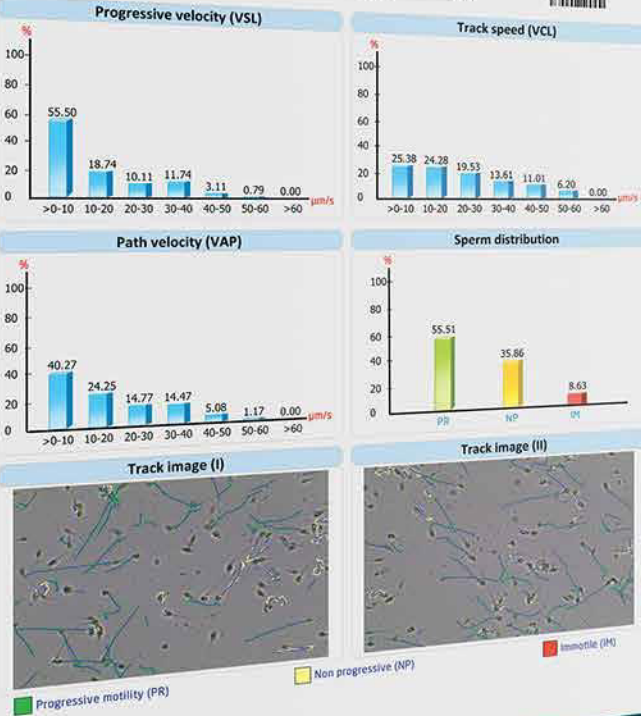
### Normal seminal profile

The semen passed the WHO. strict criteria for count, motility and morphology.

Comment

### Charts Report

Name: Patient Name Lab ID: 117



### Motility report

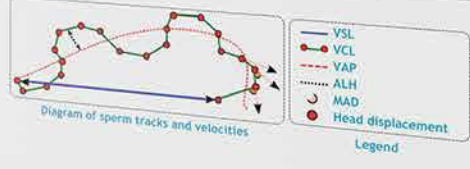
Name: Patient Name Lab ID: 117

Dynamic parameters (I)			
Classification	Conc. (million/ml)	Total number (million)	Percentage (%)
Tested sperms	96.44	385.76	100
Total motility (PR+NP)	88.12	352.48	91.37
Progressive motility (PR)	53.53	214.12	55.51
Non progressive (NP)	34.58	138.32	35.86
Immotile (IM)	8.32	33.28	8.63

**Progressive motility (PR)** Spermatozoa moving actively either linearly or in a large circle regardless of speed  
**Non progressive (NP)** All other patterns of motility with absence of progression, i.e. swimming in small circle, the flagellar force hardly displacing the head, or when only a flagellar beat can be observed.  
**Immotile (IM)** No movement

Dynamic parameters (II)			
VCL (µm/s)	23.85	VSL (µm/s)	13.88
MAD (°)	26.42	ALH (µm)	3.82
LN (%)	58.25	WOB (%)	76.2
VAP (µm/s)	18.18	BCF (Hz)	2.42
STR (%)	76.42		

VCL Curvilinear velocity	VSL Straight line velocity	VAP Average path velocity
MAD Mean angular degree	ALH Amplitude of lateral head displacement	BCF Beat-cross frequency
LN Linearity (VSL/VCL)	WOB Wobble (VAP/VCL)	STR Straightness (VSL/VAP)

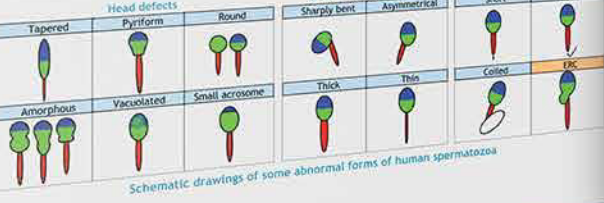


### Morphology Report

Name: Patient Name Lab ID: 117

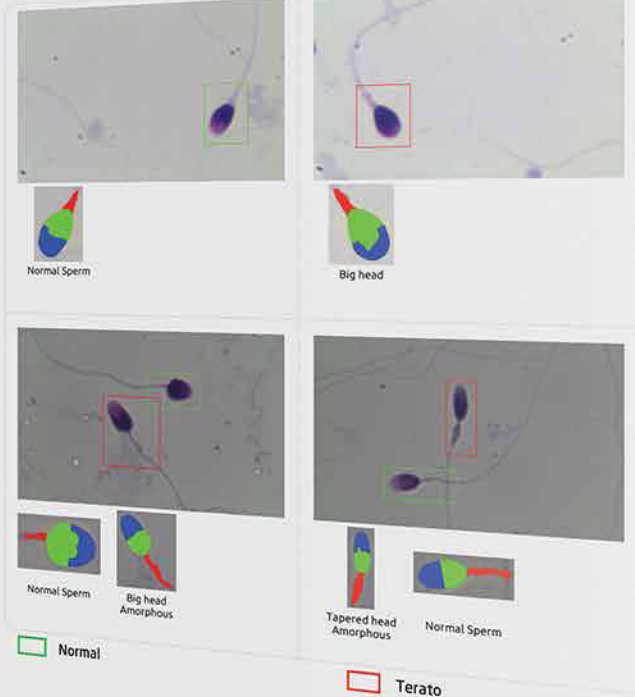
Normal sperms (Morphology Index)	57.14 %	Terato sperms	42.86 %
<b>A. Head abnormalities</b>		<b>C. Excess residual cytoplasm (ERC)</b>	
Big head	28.57 %	E.R.C.	0 %
Small head	0 %	<b>D. Principal piece (Tail) abnormalities</b>	
Tapered head	0 %	Short tail	0 %
Pyriform head	14 %	Bent tail	0 %
Round head	0 %	Multi tail	0 %
Amorphous	29 %	Break down tail	0 %
Vacuolated	0 %	Coiled tail	0 %
Double head	0 %	Irregular tail	0 %
Small acrosome	0 %	MAI (Multiple Anomalies Index) :	1.67
No acrosome	0 %	The mean number of anomalies per abnormal spermatozoon	
Exfoliated head	0 %	TZI (Teratozoospermic Index) :	1.0
<b>B. Neck &amp; Midpiece abnormalities</b>		Total number of defects divided by the number of abnormal sperms	
Thin neck	0 %	SDI (Sperm Deformity Index) :	0.71
Thick neck	0 %	Total number of defects divided by the number of sperms counted	
Bent neck	0 %		
Asymm. insertion	0 %		

Class	Head length	Head width	Length/Width	Head area	Head perimeter	Acrosome (%)
Mean of normal sperms	5.29	3.18	1.74	12.85	13.31	46.35
Mean of terato sperms	5.99	3.2	2	15	14.7	44
Reference values	4 - 5.5	2.5 - 3.5	1.5 - 1.75	7.85 - 15.1	10.8 - 14.9	40 - 70



### Morphology Images

Name: Patient Name Lab ID: 117



Miralab's SpermAnalyzer - (Computer Assisted Semen Analysis) - (User : Power)

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### Vitality report

Name Patient Name

Lab ID 117



	#	%
Live sperms	13	72.22
Dead sperms	5	27.78
Total sperms	18	100



Vitality Image (I)



Live

Vitality Image (II)



Dead

Miralab's Spermolyzer - (Computer Assisted Semen Analysis) - (User : Power)

### DNA Fragmentation Report

Name Patient Name  
Age 35  
Lab ID 117

Case no. 201711022  
Date 02/11/2017  
Ref. by



	#	%
Non fragmented	63	87.5
Fragmented	9	12.5
Total sperms	72	100

#### DNA Fragmentation Index

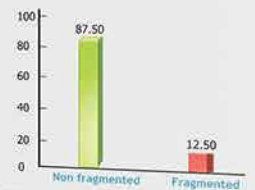
DFI 12.5 %

- < 15 Excellent fertility potential
- 15 - 30 Good fertility potential
- > 30 Poor fertility potential

#### Comment

The sample has an Excellent fertility potential according to WHO strict criteria

	#	%
Degraded	2	2.78
Without halo	1	1.39
Small halo	6	8.33
Medium halo	13	18.06
Big halo	50	69.44

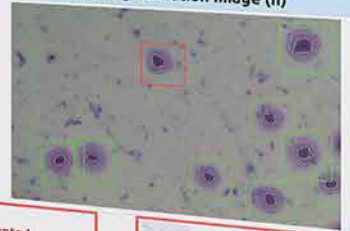


DNA Fragmentation Image (I)



Non fragmented

DNA Fragmentation Image (II)



Fragmented

Degraded

Miralab's Spermolyzer - (Computer Assisted Semen Analysis) - (User : Power)



We developed **MiraStain**<sup>®</sup> and **MeraKit**<sup>®</sup> series. They are ready to use reagents which facilitate all **Spermolyzer's** Sperm Function Tests





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