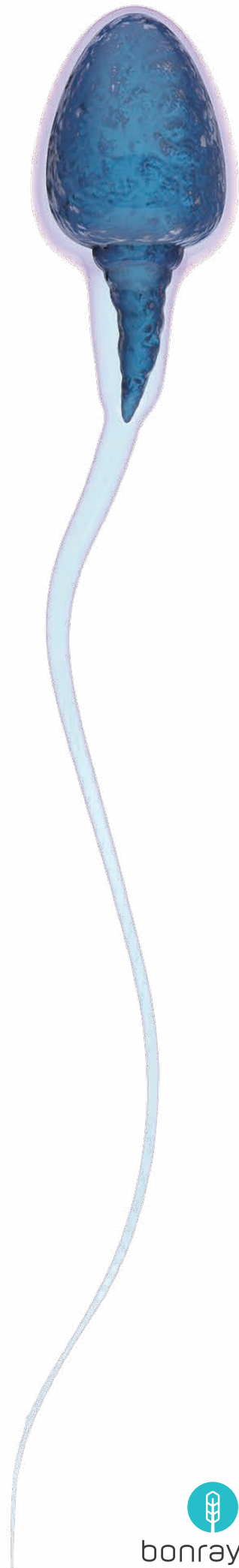


# Semen

## Quality Analyzer

World's First Fully Automatic Device



# Who we are and What we do



bonraybio®

## About Us

Bonraybio is an established team of skilled engineers & scientists with extensive experience in in vitro diagnostic industry. The company is dedicated to the research, development and commercialization of high-precision, user-friendly in vitro diagnostic devices to improve human healthcare. By leveraging our optical technology development expertise and extensive intellectual property, we aim to become a global leader in disposable microscopic diagnostic testing.

The rise in aging populations and increase in infertility rates have led to an increasing number of social and economic problems in recent years. As population is used as a basic index to gauge a country's competitive strength, how to increase the fertility rate of a population has become an important issue and priority for policymakers around the globe.

However, despite the declining trend in populations due to an increase in infertility rates the medical device industry has very few products focusing on semen testing to help alleviate the infertility problem. To fulfill such unmet medical needs, Bonraybio has developed a fully automated and user-friendly microscopic semen quality analyzer ( **LensHooke™** ) that can easily determine all of the critical semen quality parameters such as pH, sperm concentration, motility and morphology. We believe our LensHooke semen quality analyzer will benefit physicians in identifying and treating the infertility problems of their patients.

**LensHooke™**

**G-KUP™**



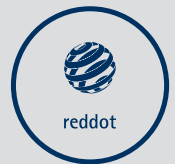
Established  
2016



Patents  
30+



Technology  
Electronic  
Optical  
Mechanical  
Algorithm  
Application



Award  
reddot  
award  
winner



Product Brand  
**LensHooke™**  
G-KUP™



Certificate  
**CE**  
0197   
**FDA** **CFDA**  
※Applying Registration

# The Product



## Semen Quality Analyzer

Compact & Automatic



### 1 Easy & fast

LensHooke™ is easy to use. No technical background is needed to perform the test. Results are obtained in 2-5 minutes.



### 2 Touch Panel

LensHooke™ uses a resistive touch screen to allow medical personnel to operate screen with gloves on.



FULLHD

### 3 Auto Focus & Full HD

LensHooke™ is capable of taking 1080P Full HD dynamic images to enable immediate sperm morphology examination by medical personnel.



HDMI

### 4 Real-Time Image

LensHooke™ is equipped with an HDMI connection for external monitors. It can display dynamic images with all key analytical data (pH/concentration /motility/morphology) on screen in real time.

## 4 Key Data for Diagnosis



pH value



Concentration



Morphology



Motility  
(NP, PR, Total Motility)

※ Comply with WHO 4th & WHO 5th edition.

## Test Cassette

Disposable Counting Chamber



### Optical Grade Material

Mobile phone lens-equivalent material provides total luminous transmittance, and low haze factor.



### Anti Leakage

Patented concaved design with anti-leakage function prevents accidental specimen contamination.



### Insertion Guide

Special insertion guide allows easy and precise insertion of the cassette.



# Test Procedures

## Operation Steps

STEP 1

Apply the Specimen



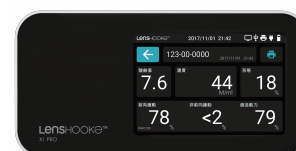
STEP 2

Insert the Test Cassette



STEP 3

Read the result



Only **3** steps, and **2~5** minutes to get all of the test results!

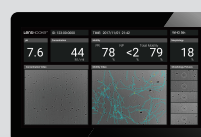
## Analyzer can be easily connected to other devices



HDMI



Smart Phone



Tablet PC



Screen

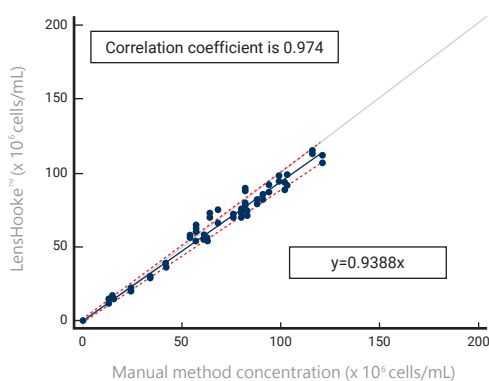
# Performance

## Manual Method V.S LensHooke™ Semen Quality Analyzer

### Concentration



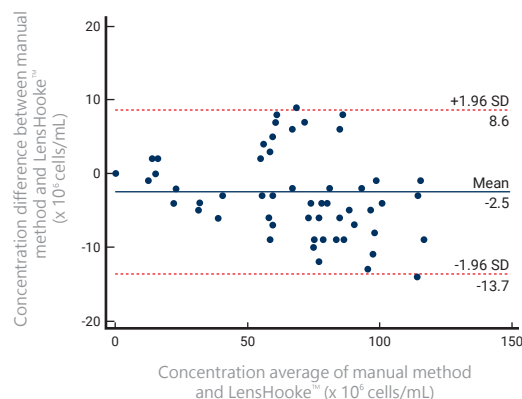
#### Correlation analysis (Pearson's correlation coefficient)



Comparison of sperm concentration results between LensHooke™ Analyzer and a manual microscope method. Solid blue line represents the regression line, solid black line represents diagonal line, and dashed red line represents confidence band (n=60).



#### Deviation analysis (Bland-Altman analysis)

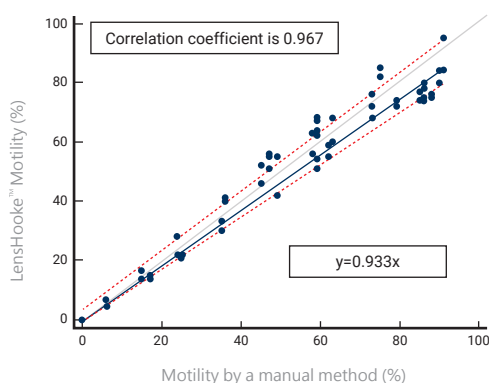


Bland-Altman analysis of the concentration results between LensHooke™ Analyzer and a visual manual microscope method. The solid blue line is the mean difference of the method and the red dashed lines are the 95% confidence ranges.

### Motility



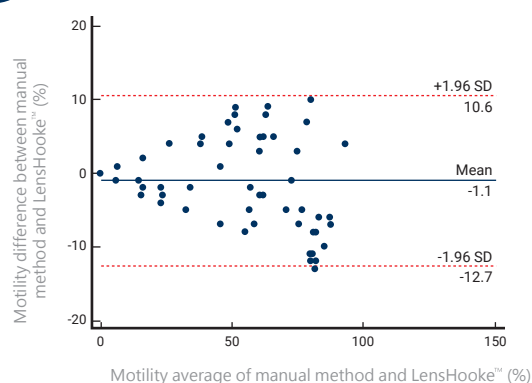
#### Correlation analysis (Pearson's correlation coefficient)



Comparison of sperm motility results between LensHooke™ Analyzer and a manual microscope method.



#### Deviation analysis (Bland-Altman analysis)



Bland-Altman analysis of the motility results between LensHooke™ Analyzer and a visual manual microscope method.

# Why semen analysis

## Increased Populations in



### Elders

By 2020, people with an age of 60 and older will outnumber children younger than 5 years old.



### Infertile couples

48.5 million couples are unable to have a child.



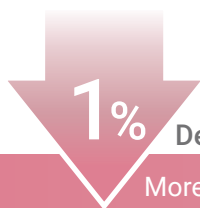
### Couples unable to have a second child

10.5% of women are unable to have a 2nd baby after 5 years of trying.



### Infertile male

50% infertility caused by semen quality problems in male.



Decrease in sperm count per year of aging.



More than 90% of male infertility cases are due to *low sperm counts, poor sperm quality*, or both.

Source : World Health Organization and European Association of Urology.

## Who needs Semen Analysis?

According the report of the European Association of Urology, around 50% infertility caused by semen quality problems in male.

Therefore, monitoring of sperm status in males has become an important priority.

In addition to males infertility issues, males who have undergone vasectomies, plan to impregnate, store sperm, donate sperm or have androgenic problems, all need to do the semen analysis.



Infertility



Vasectomy



Plan to get impregnate



Sperm Storage



Sperm Donation



Androgenic Problem



# The Accessories



reddot design award  
winner 2017

## Liquefaction Test Cup

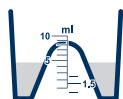
with innovative design



— Ø53 mm —

### 1 Wide Opening

Enlarged cup opening (53mm in Dia.) is user friendly for sample collection.



### 2 Volume check

Large concaved bottom design allows for an easy small sample volume check by medical technologists.



PASS

### 3 Liquefaction check

Special patented V-Stick design allows proper semen liquefaction check by medical technologists.



### 4 Pipette Free

Integrated dispenser design with the liquefaction test cup (C-KUP) allows easy sample dispensing without the need of a pipette.

World's first cup to **Collect & Check** the sample.

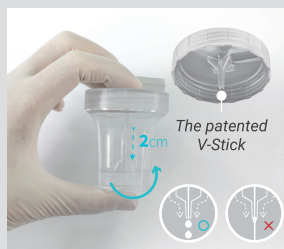
## How to use?



**1** Shake well of specimen and check on the specimen color & volume.



**2** Turn the cup upside down.



**3** Check on the liquefaction status.



**4** Open the tip cover.



**5** Place a drop of semen on the inspect device.

LensHOOKE™

