



# Influence of temperature and preparation techniques on sperm quality

Annelies Thijssen, PhD student

W. Ombelet – N. Dhont – R. Campo

# Introduction

- Laboratory factors influencing sperm quality

- Preparation techniques

Chen and Bongso, 1999. Hum Reprod.

Marchesi et al., 2010. Eur J Obstet Gynecol Reprod Biol.

- Temperature during sperm preparation

Franken et al., 2011. Andrologia.

Otsuki et al., 2008. J Assist Reprod Genet.

- Time interval from sperm preparation to IUI

Yavas and Selub, 2004. Fertil Steril.

- Temperature during long term *in vitro* incubation

Matsuura et al., 2010. Asian J Androl.

Petrella, et al., 2003. Fertil Steril.



# Introduction

- IVF laboratory:
  - Incubation in CO<sub>2</sub> incubator at 37°C
- Testis temperature = 2-3°C below body temperature
  - High testis temperature is associated with infertility (i.e. cryptorchidism)



Gallup GG., 2009. Evolutionary Psychology.



# Introduction

J Assist Reprod Genet (2008) 25:413–415  
DOI 10.1007/s10815-008-9242-1

SHORT COMMUNICATION

## A comparison of the swim-up procedure at body and testis temperatures

Junko Otsuki • Mizuki Chuko • Yoshie Momma •  
Keiko Takahashi • Yasushi Nagai

Journal of Andrology, Vol. 23, No. 2, March/April 2002  
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## Effect of Different Incubation Conditions on Phosphatidylserine Externalization and Motion Parameters of Purified Fractions of Highly Motile Human Spermatozoa

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First International Journal of Andrology

# andrologia

ORIGINAL ARTICLE

## Temperature controlled centrifugation improves sperm retrieval

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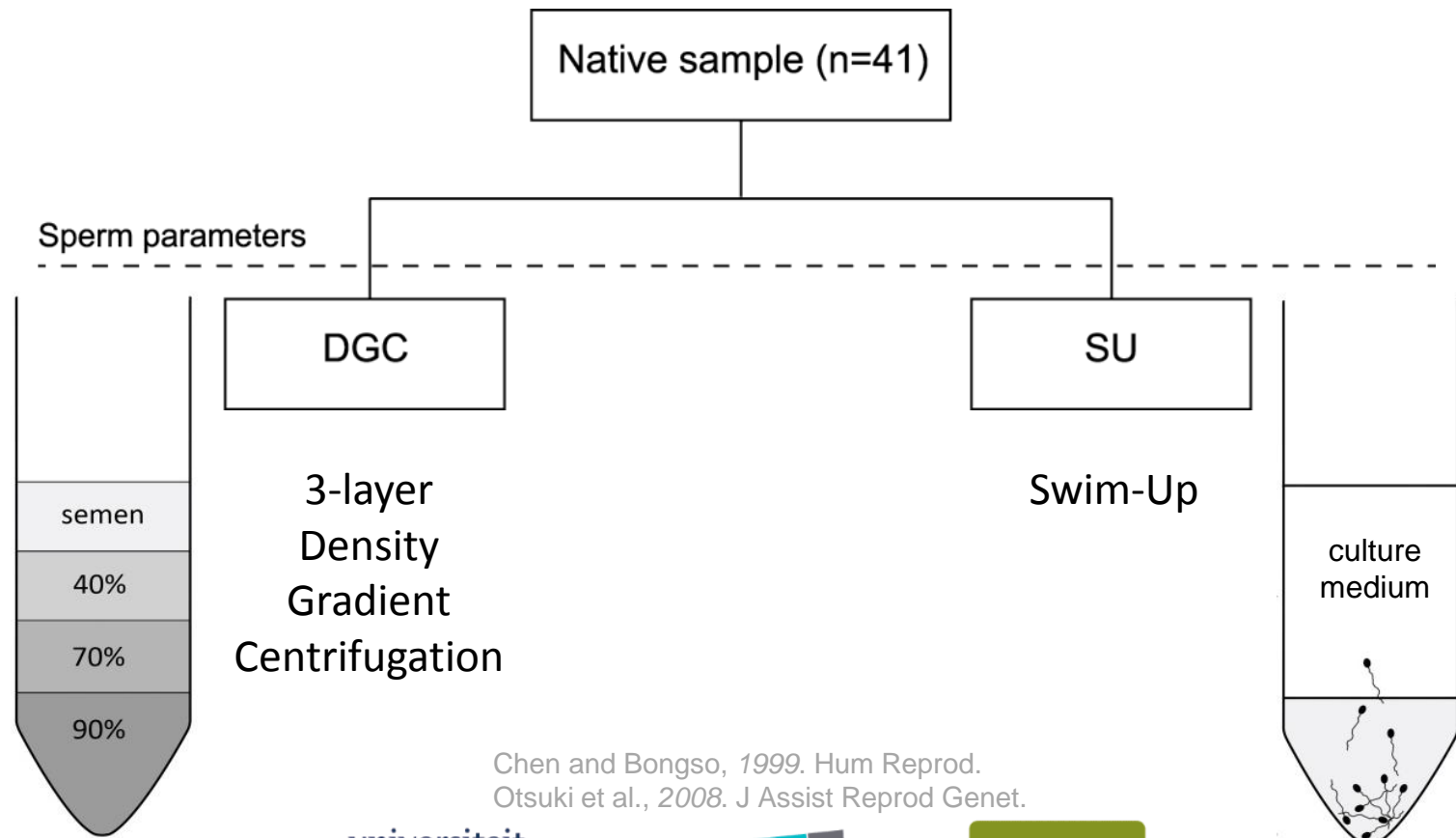
# Introduction

- Aim

- Examine the effect of long term (24h) *in vitro* sperm incubation at room temperature (RT; 23°C) versus testis temperature (35°C) on various semen quality parameters
- Compare the influence of sperm preparation on sperm quality after incubation

# Materials & Methods

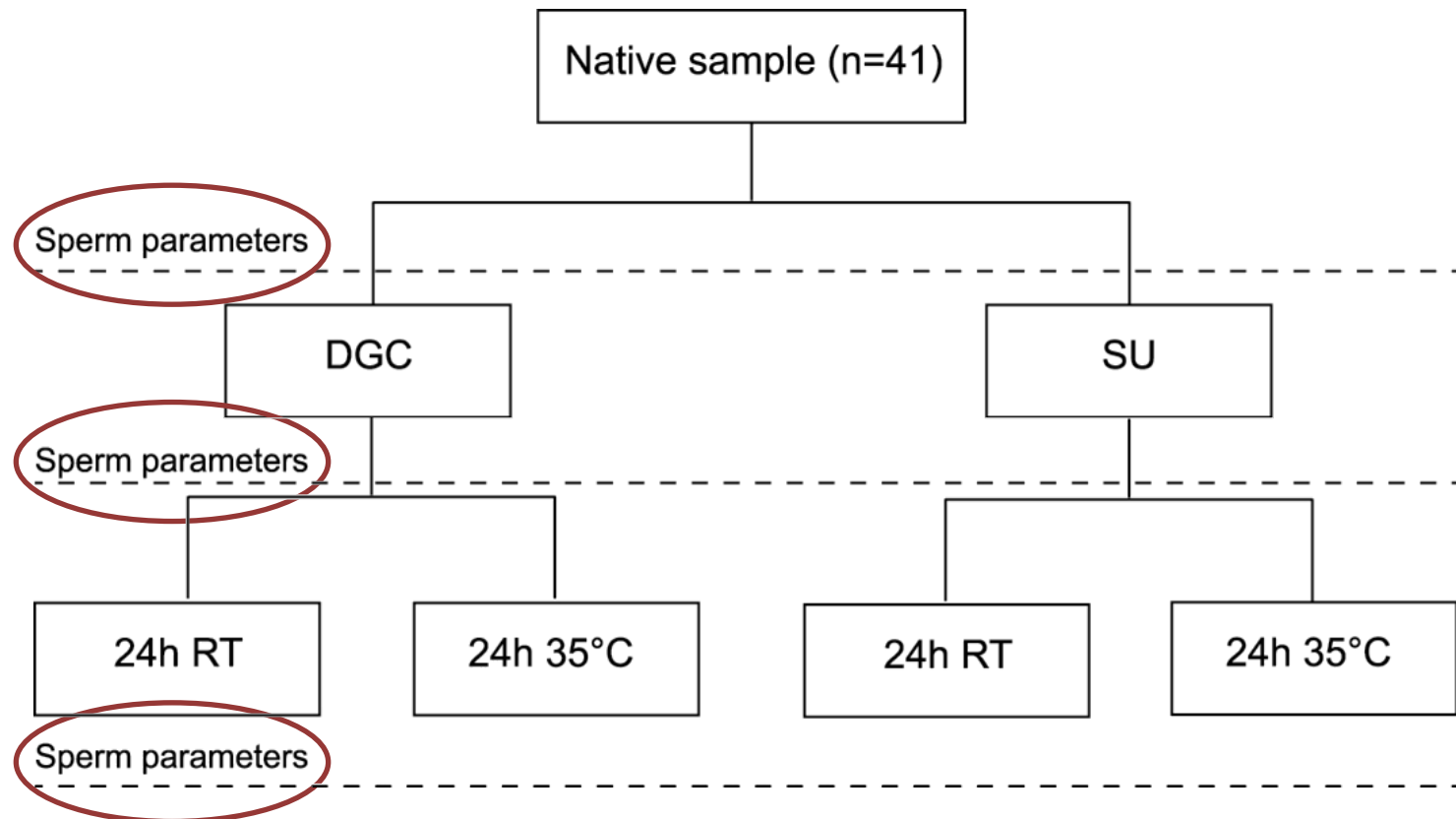
- Schematic overview of the experimental design



Chen and Bongso, 1999. Hum Reprod.  
Otsuki et al., 2008. J Assist Reprod Genet.

# Materials & Methods

- Schematic overview of the experimental design





# Materials & Methods

- Sperm parameters

- Total sperm number

- Motility

- Morphology

- Viability (eosin or 7-AAD)

- Acrosome reaction (CD-46)

- Apoptosis (Annexin-V)

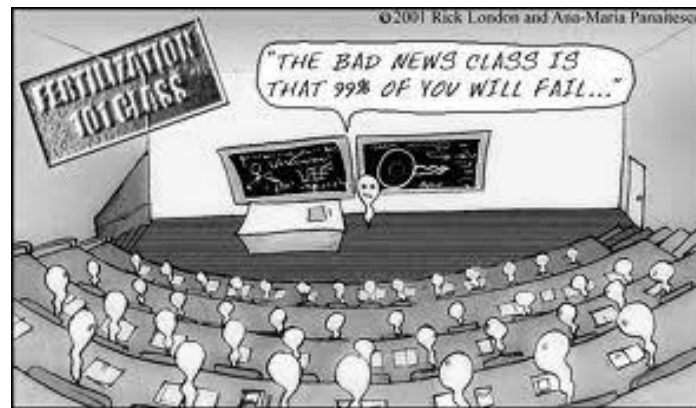
Routine

Sperm function

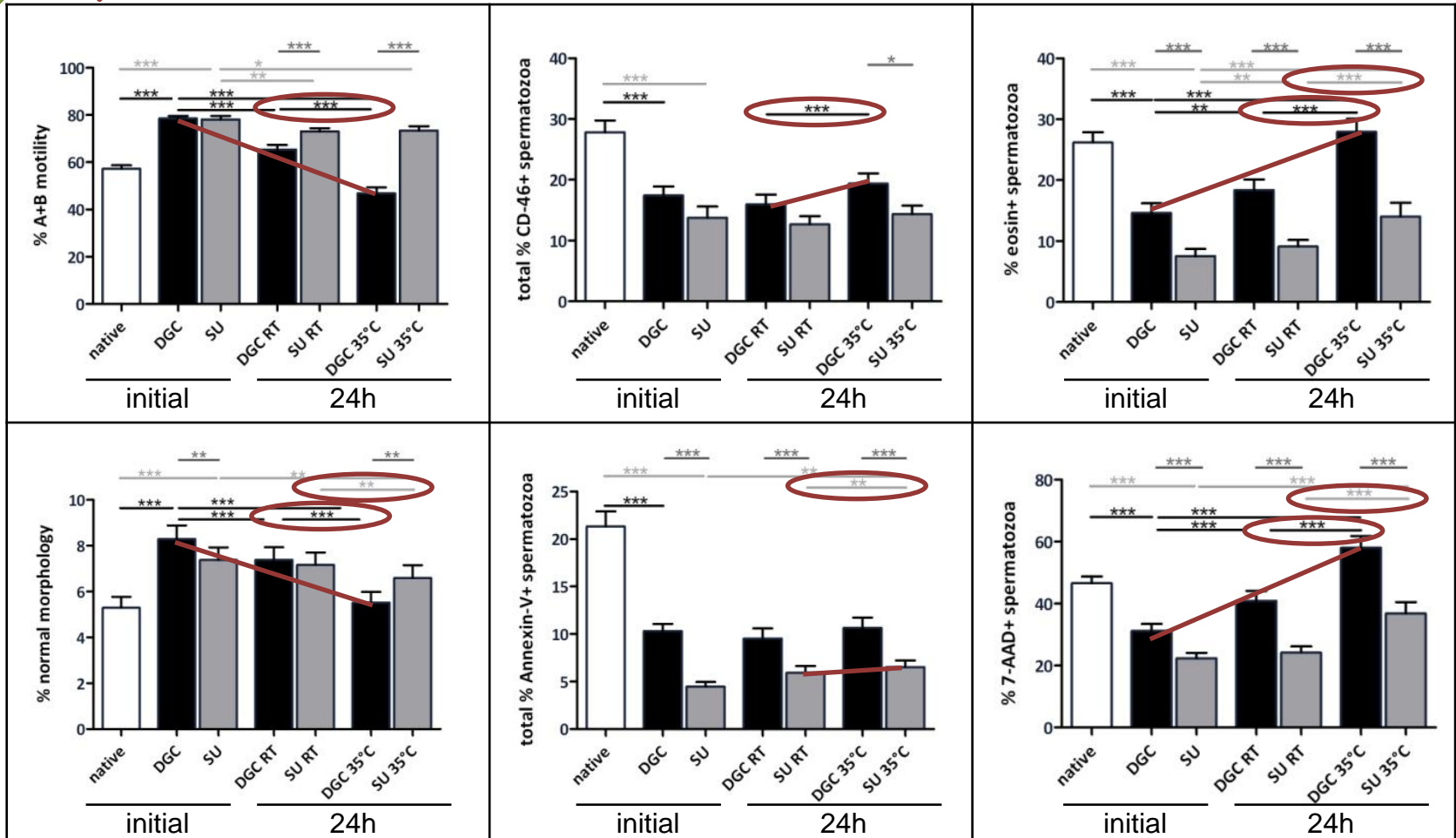


# Materials & Methods

- Inclusion criteria
  - Normal sperm sample according to WHO (2010)
    - Total sperm number of 39 million
    - Progressive motility of  $\geq 32\%$



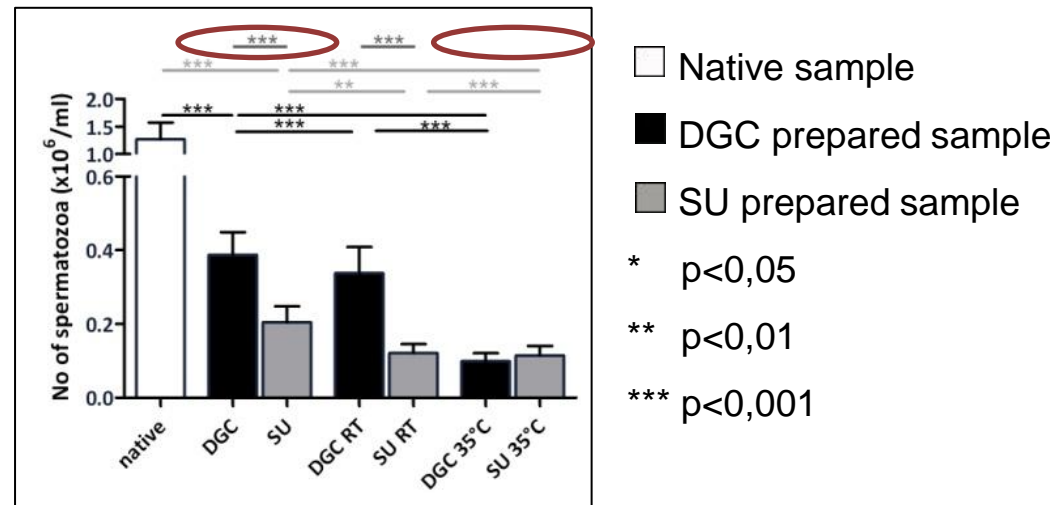
# Results



□ Native sample ■ DGC prepared sample ■ SU prepared sample \* p<0,05 \*\* p<0,01 \*\*\* p<0,001

# Results

- 'Good quality' spermatozoa



Number of motile, morphologically normal, non-acrosome reacted and non-apoptotic spermatozoa

# Conclusion

- Long term incubation at RT:
  - Better preservation of:
    - progressive motility
    - normal morphology
  - Lower percentage:
    - acrosome reacted
    - apoptotic
    - dead spermatozoa



→ translates into improved pregnancy rates?



## Take Home Message

*In vitro*, storage of prepared sperm samples at RT is beneficial for preserving sperm quality



# Thank you for your attention!

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