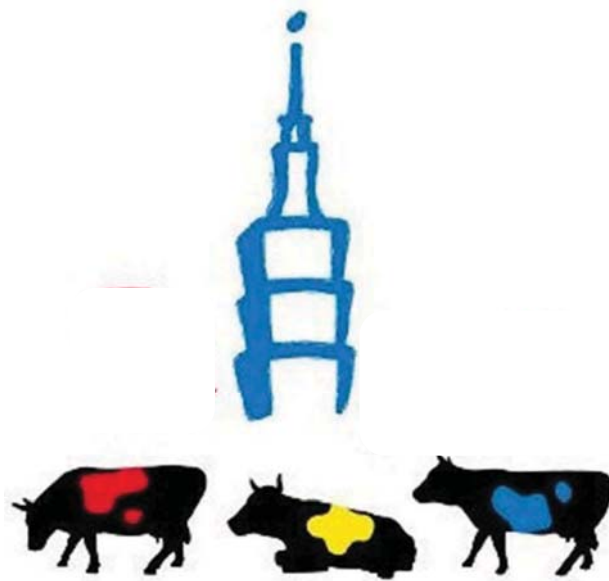
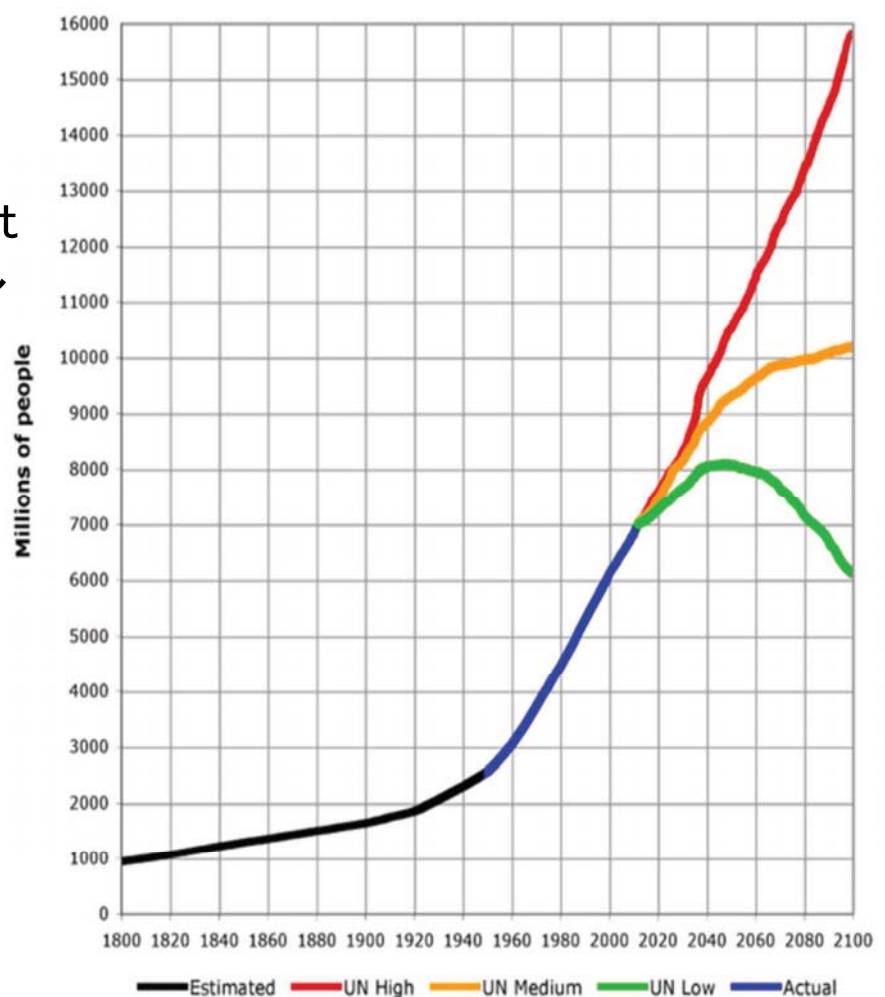


# 性選別精液的人工生殖技術

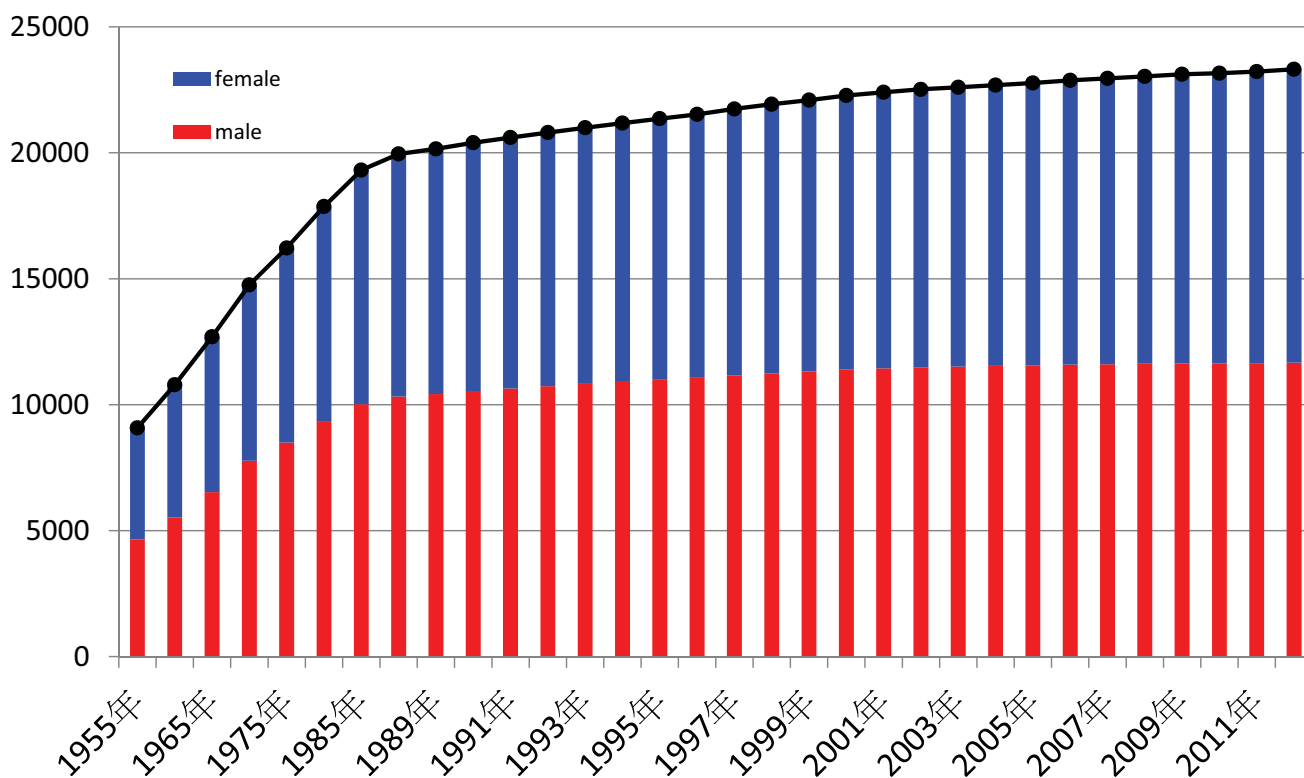


一般社團法人 家畜改良事業團

## Population Forecast ~United Nations~

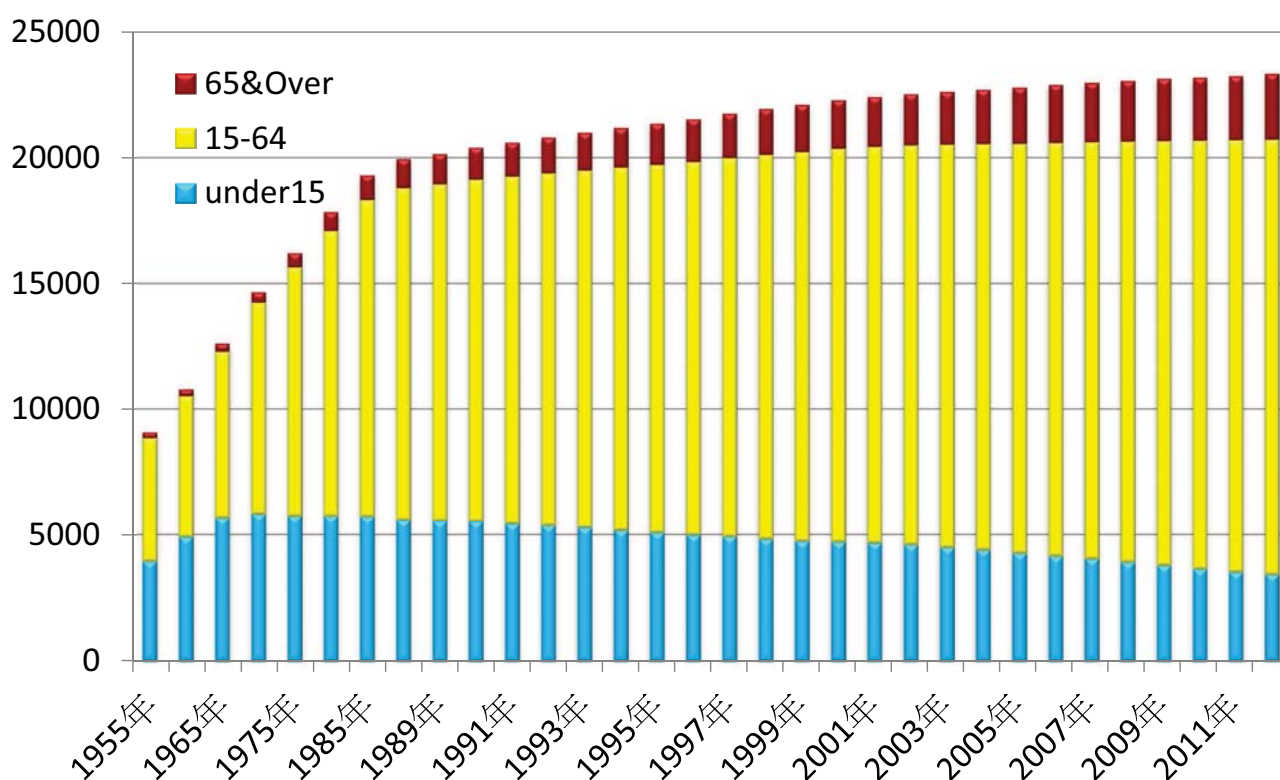


## 台灣人口推移

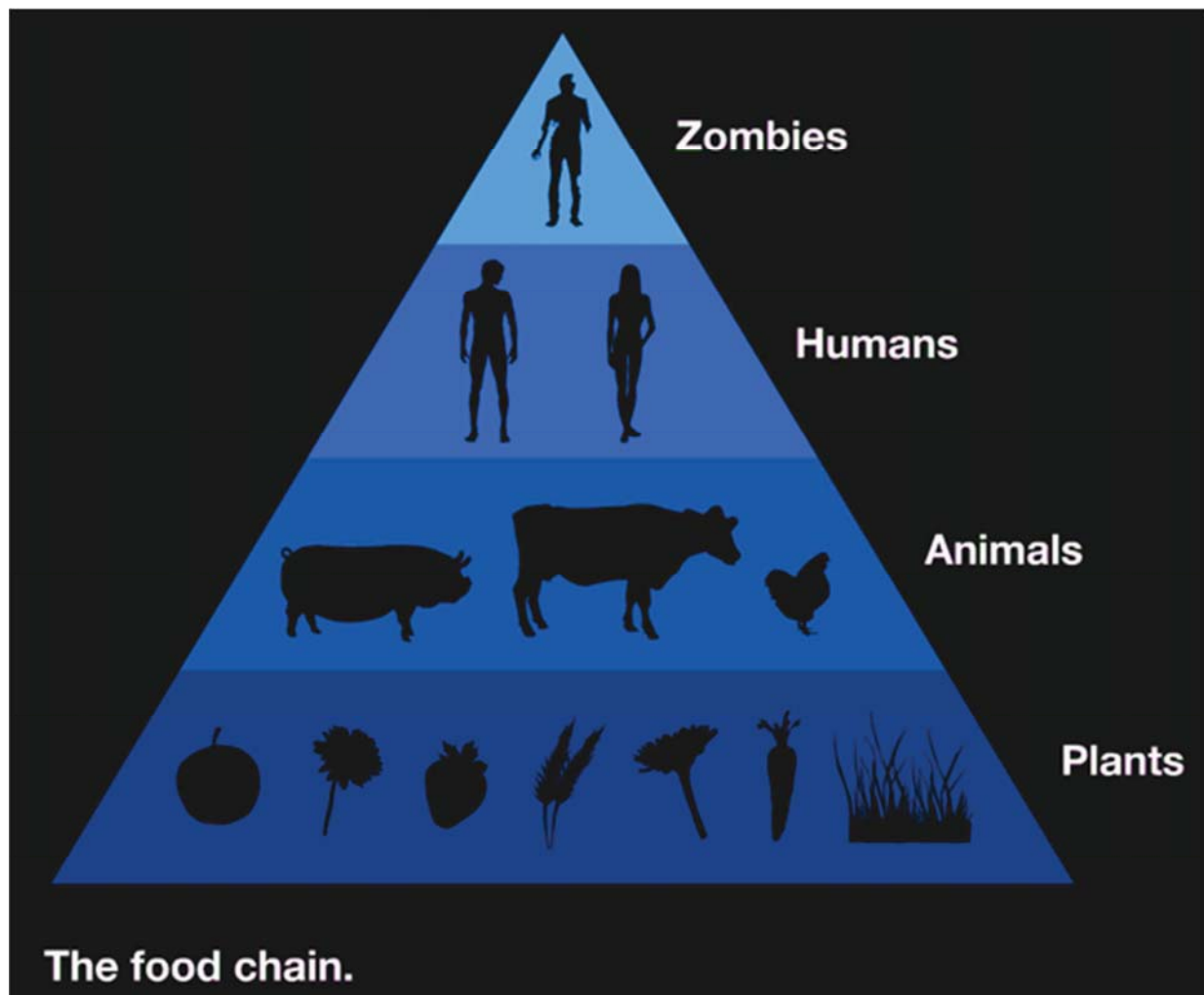


Taiwan Statistical Data Book 2013

## 台灣人口構成推移



Taiwan Statistical Data Book 2013



Population Growth



Food Crisis



Food Supply



**Livestock Production**

- Need for Labor
- Increase in Feed
- Disposal of Excreta
- • • etc.



**Calf Efficient Production**

**Birth Classification**



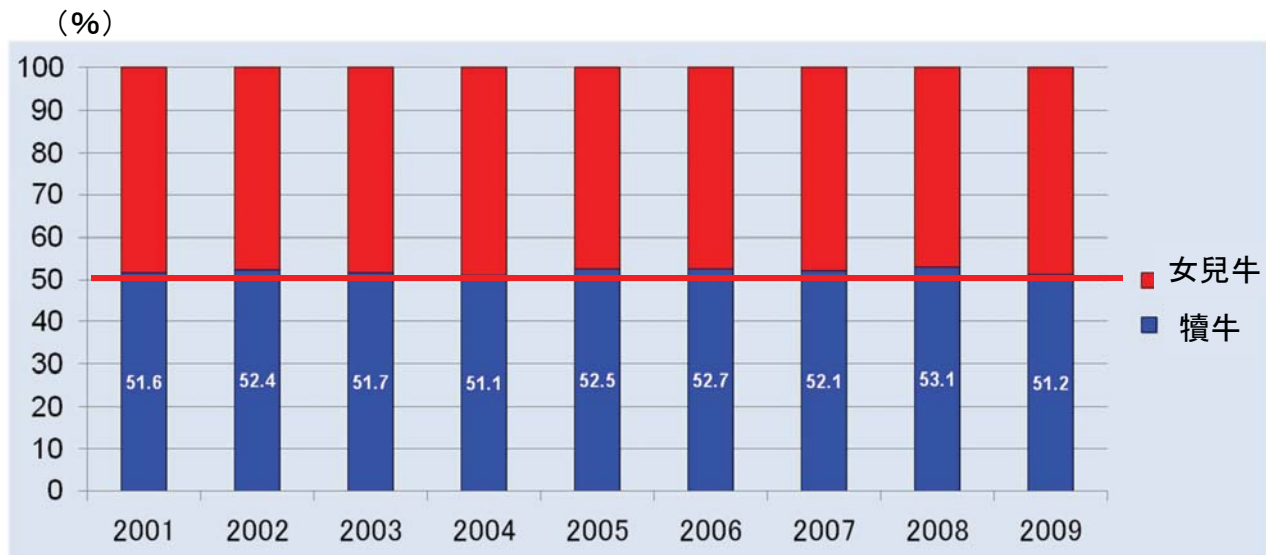
Embryo Sexing

Sorted Semen

## Sex ration by Artificial Insemination ～Hokkaido, Japan～

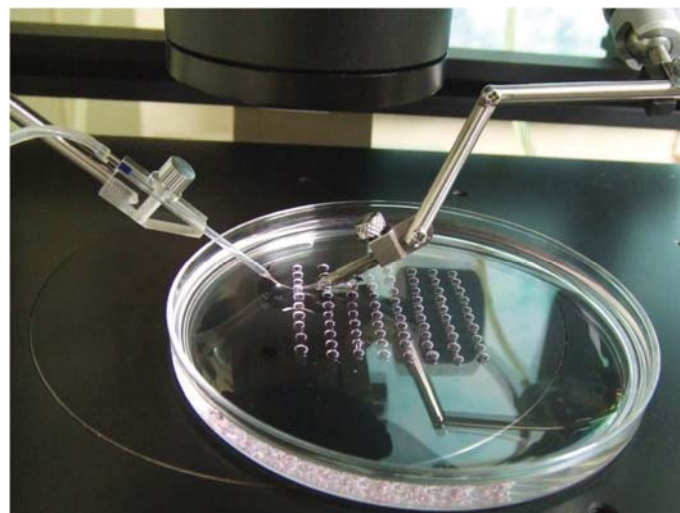
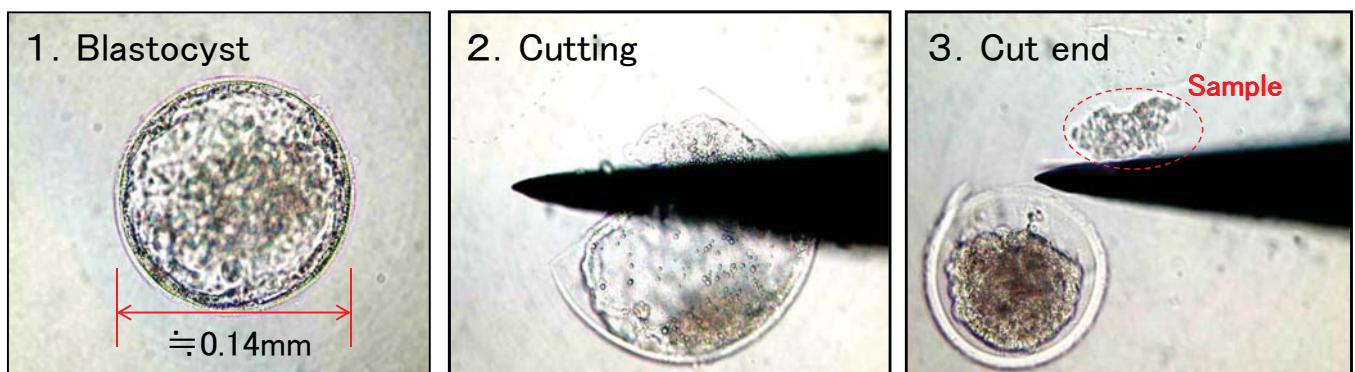
Period : Jan. 1 2001～ Dec. 31. 2008

Calf production head count : 51,220

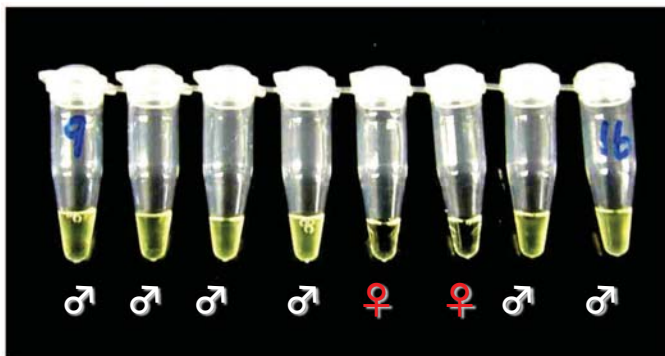
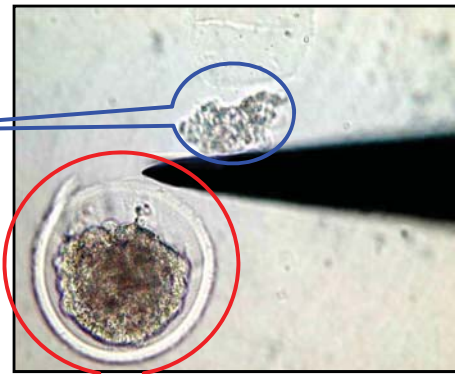


第65回北海道家畜人工授精技術研修大会(2009.10.15-16)

## Embryo Sexing (LAMP method)

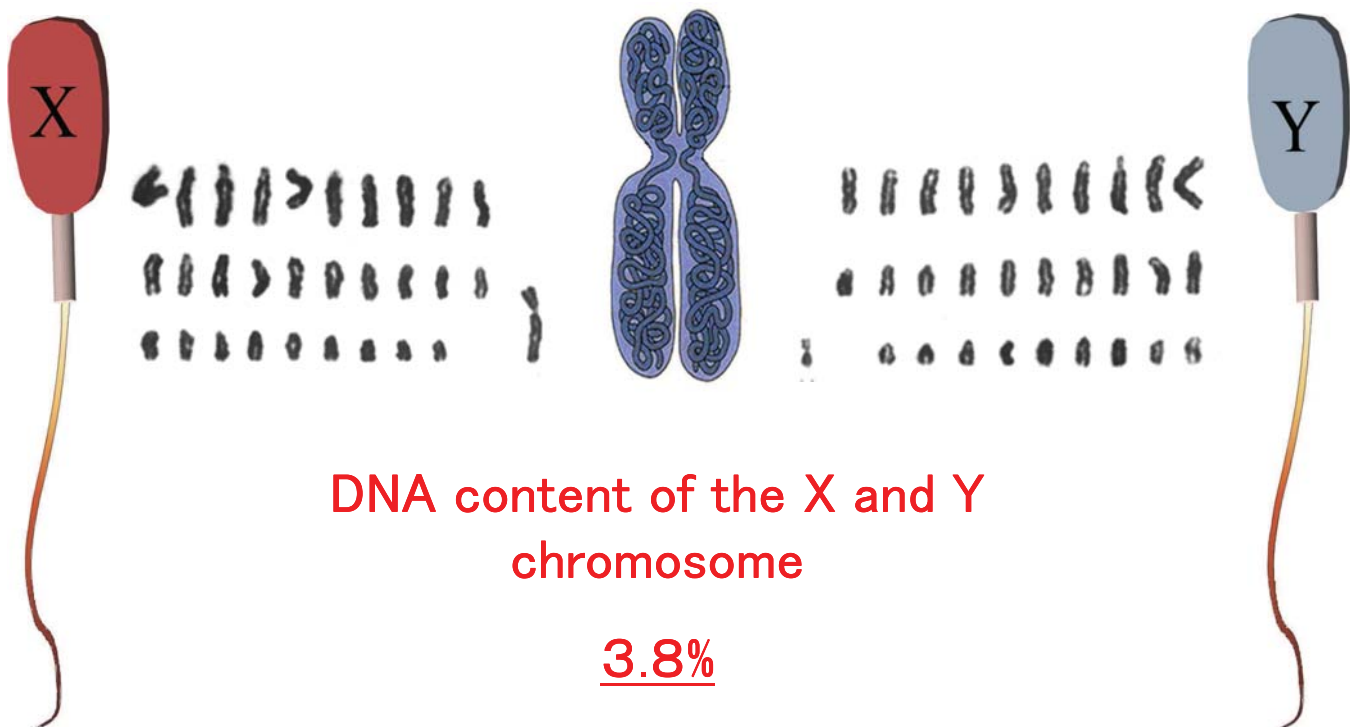






Sex Ratio ♂ : ♀ = 6 : 4

## Principle of Sorting Sperm

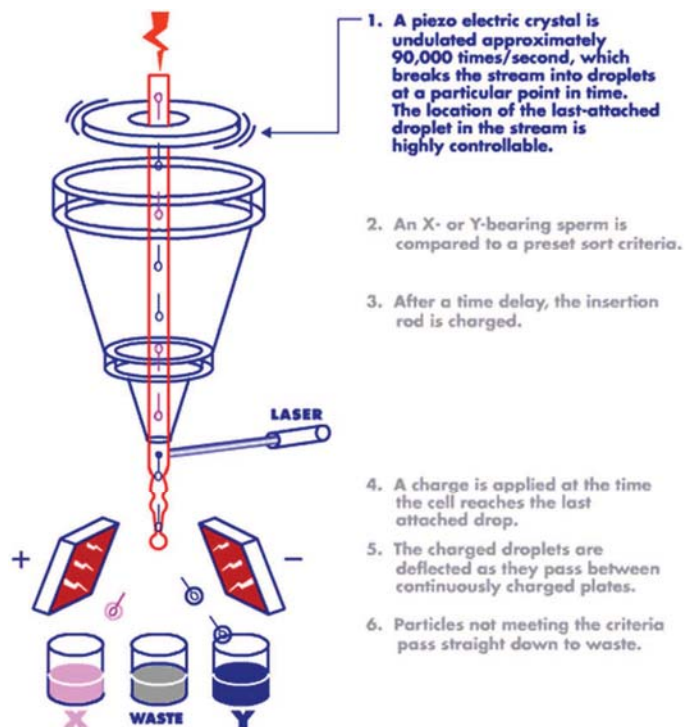


## Staining of sperm nucleus



difference in luminance

## Sorting of Sperm

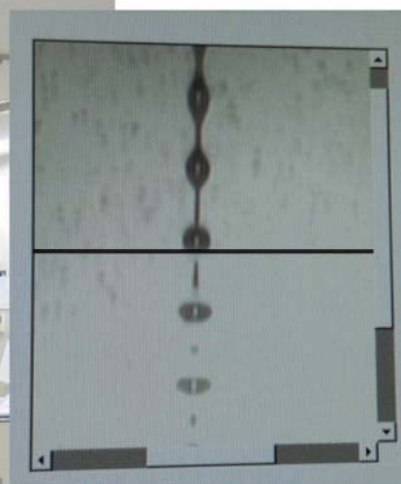
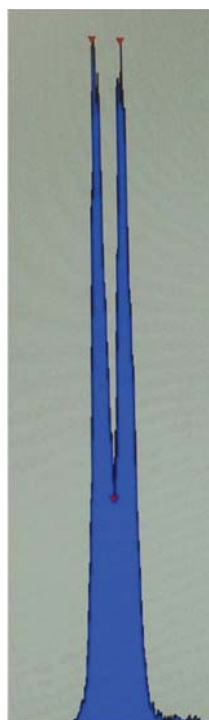


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家畜改良技術研究所







## Information of Sorting Sperm

XY Technology Inc. : 85% or more

*Sort<sup>90</sup>*: Accuracy of 90% \*

Other Products: Accuracy = ?

\* Male is born 10%

*Sort<sup>90</sup>*: NTP Top40 or more

- Production Capacity
- Breeding Value (EBV)
- Genetic Ability

Other Products : Ability of the Sire ?

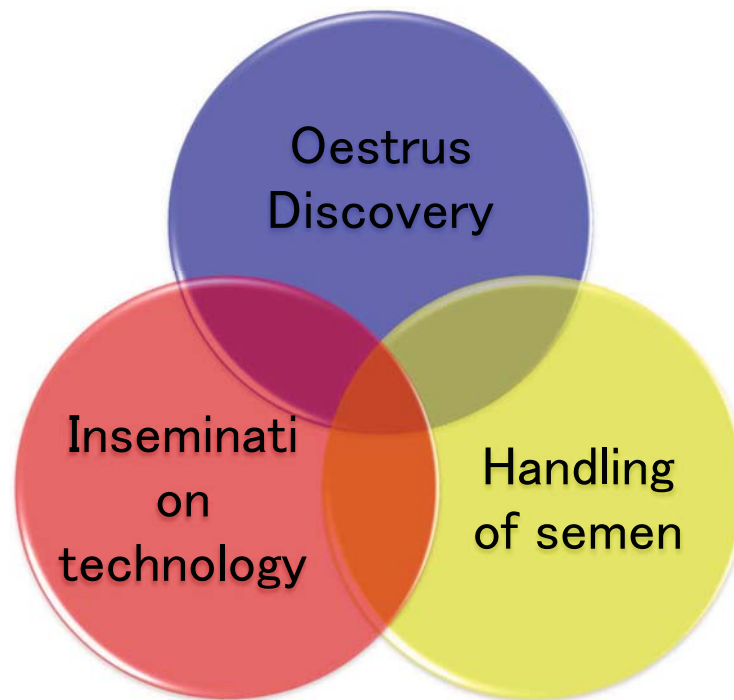
## Conception results of sorted sperm (*Sort<sup>90</sup>*)

Breed		No. of AI	Unknown	No.(%) of conception
Holstein	Heifer	4,214	87	1,888 (45.7)
	Cow	2,666	27	896 (34.0)

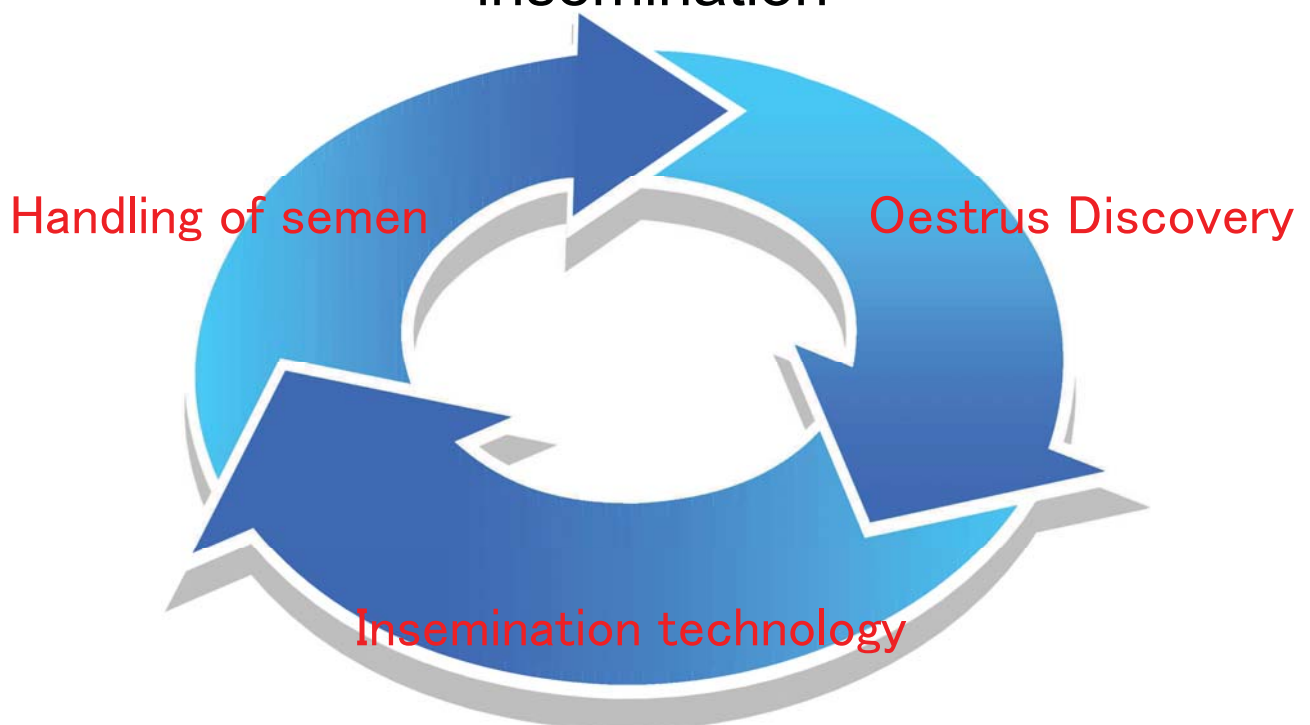
Feb 20, 2014



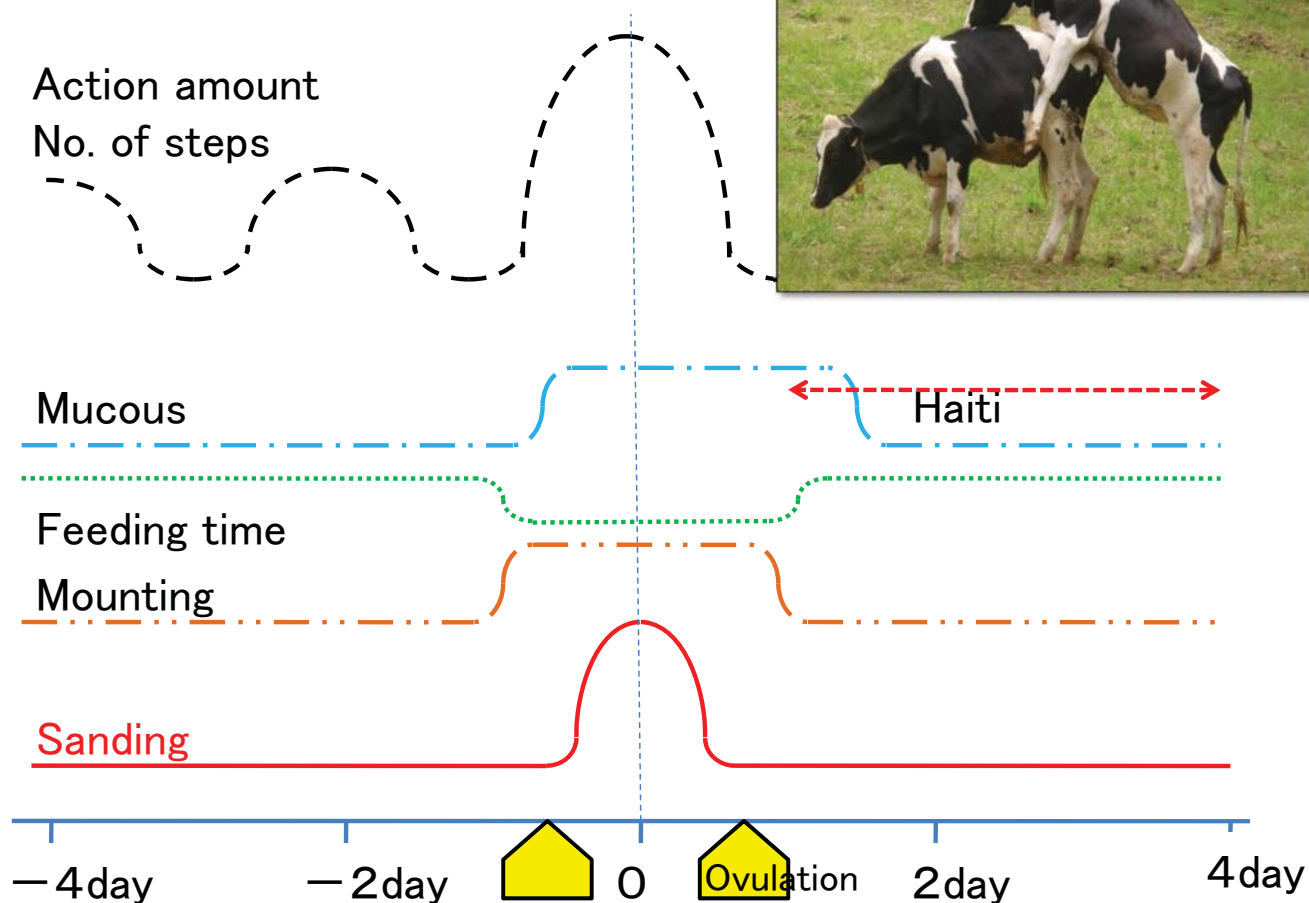
## Three elements involved in Artificial Insemination



## Negative three factors involved in artificial insemination



## Oestrus signs



## Handling of frozen semen ~Time and Temperature~



### Container, Thermometer and Timer

Influence of personality

- loose
- impatient

Sense of time is different

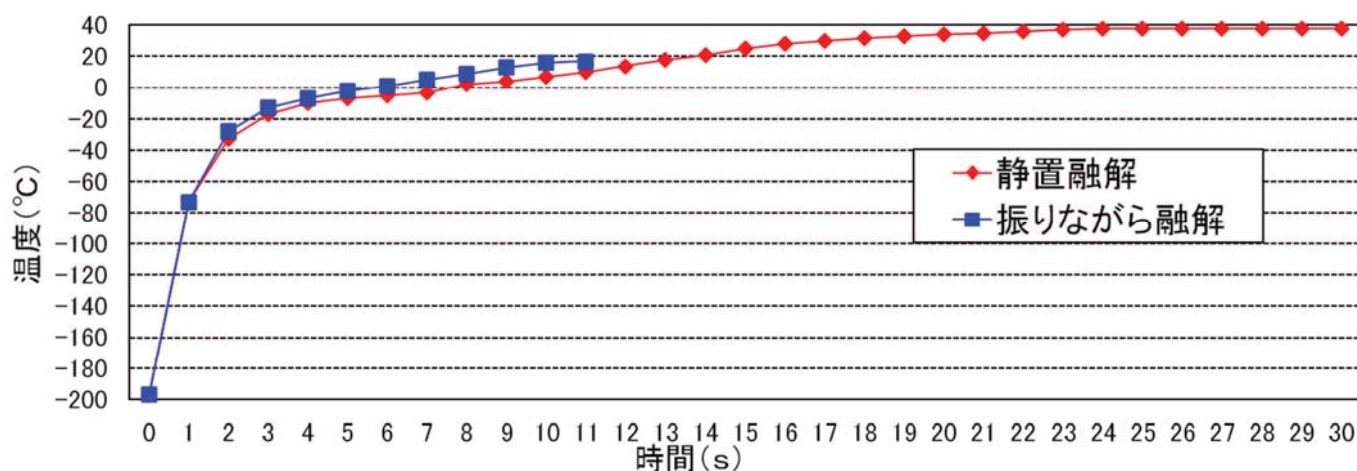
Influence of personality

- sensitive to heat
- sensitivity to cold

Sensible temperature is different

## Changes in the temperature in the straw

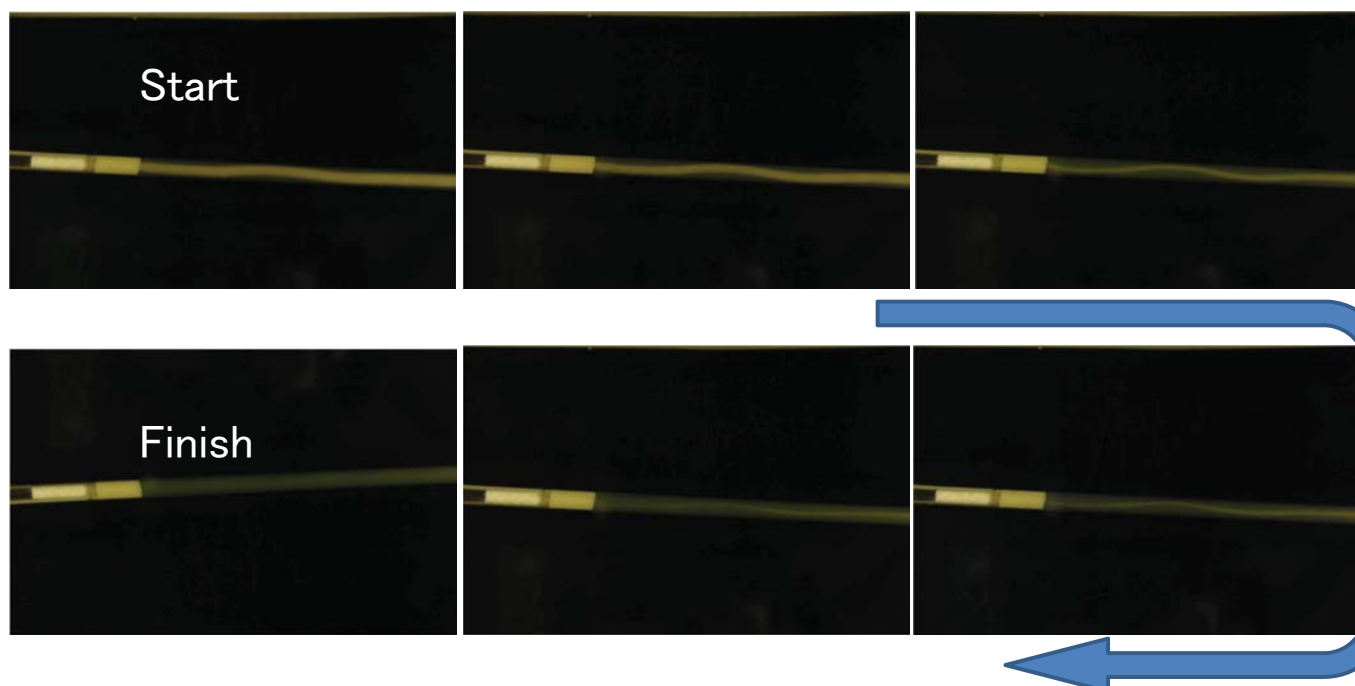
38°C water, the sensor in the straw



### Summary

- ◎ Rapid thawing.
- ◎ Do not lower the elevated temperatures.

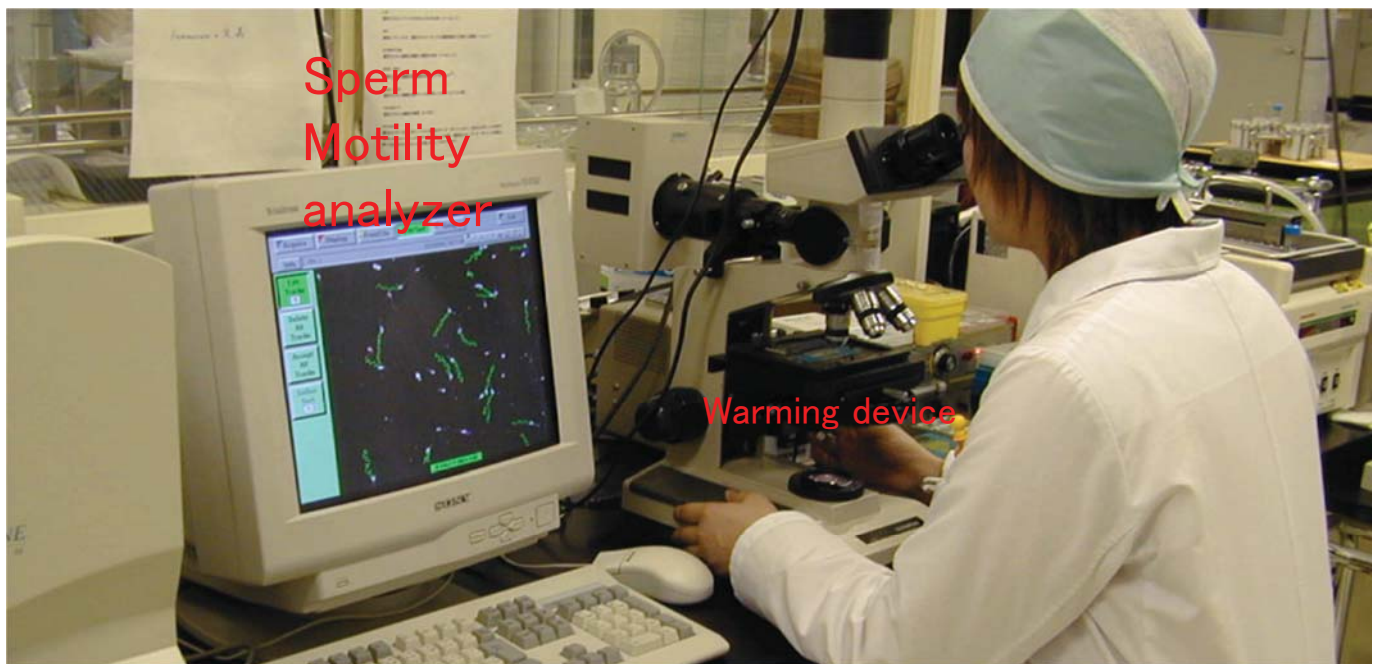
## State thawing of frozen semen



### Summary

- ◎ Ice is completely thawed.
- ◎ After thawing, do not leave.

## Quality inspection of semen



Analysis of sperm motility

## Conclusion

- Use a thermometer
- Setting of water at 35 to 38 degrees
- Make sure that the ice had thawed
- Not change the temperature in the straw
- Smoothly insemination



## Storage of sperm

Ciliated epithelial cells of the narrow portion oviduct supplemental

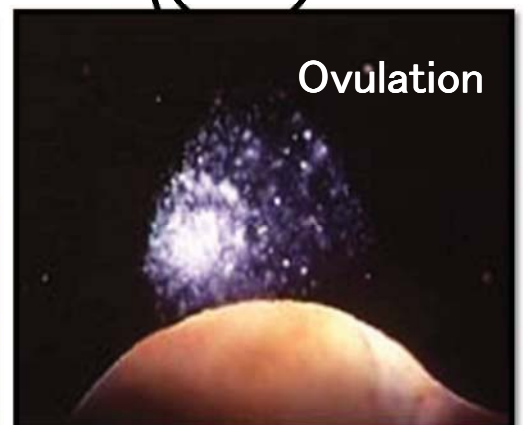
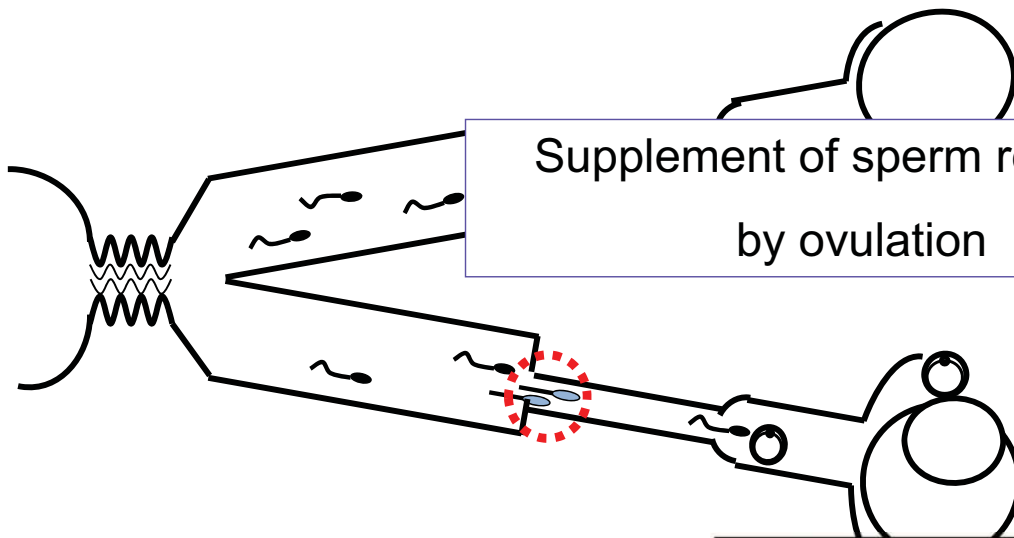
Transition into the uterus from the vagina

- Muscle contraction movement of the uterus and fallopian tube
- Movement of sperm



Tubal junction and uterine → Sperm selection  
 Stored at the narrow portion oviduct = Limit of sperm count

Supplement of sperm released by ovulation



## Breeding direction of Holstein in Japan

AI    Prerequisite : male production rate = 50%

-Ensure female is difficult  
-Male selling price is cheap } Use of sorted semen

### Combination of ET

ET in the female is not pregnant

### Effects of heat stress

ET of IVF embryo product by sorted semen

Conception rate 0⇒30%

## Efforts to improve heifer production Use of sorted semen

### Improvement of conception rate

- Compliance with sorted semen use manual
- Calculations of profit and loss separation

⇒                      Conceptionrate improvement  
                            in the compliande manual

	2010 → 2012
Cow	27.3%→40.0%
Heifer	44.8%→52.5%

## Use cases of sorted semen (*Sort<sup>90</sup>*)

