

# How can twins have completely different genetics?

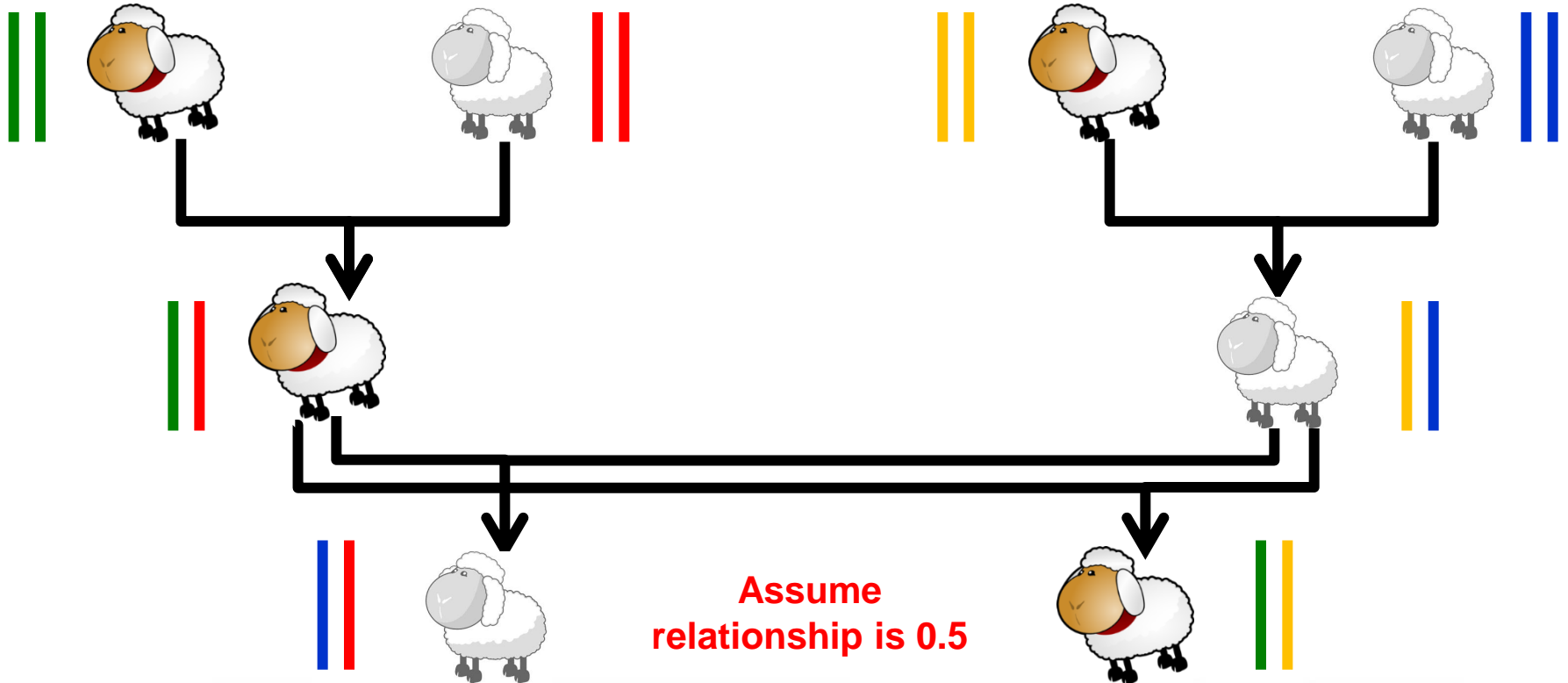
**Donagh Berry<sup>1</sup>, Alan Bohan<sup>2</sup>, Eamon Wall<sup>2</sup>, Aine O'Brien<sup>1</sup>,  
Kevin McDermott<sup>2</sup>, & Noirin McHugh<sup>1</sup>**

***<sup>1</sup>Teagasc, Moorepark***

***<sup>2</sup>Sheep Ireland***

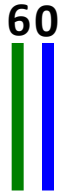
[Donagh.berry@teagasc.ie](mailto:Donagh.berry@teagasc.ie)

# How good is pedigree?

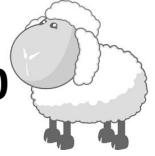


Assume relationship is 0.5

# In reality



+6 95% acc



40% acc +10



52% acc ~~8~~

>52% acc +15



~~8~~

+9



~~8~~

+1

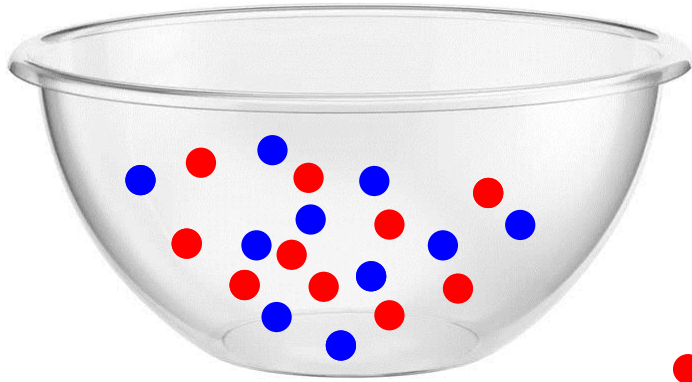


~~8~~

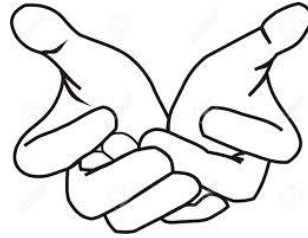
+7

# Inheritance patterns of DNA

● 3-star



● 3-star



● 3-star

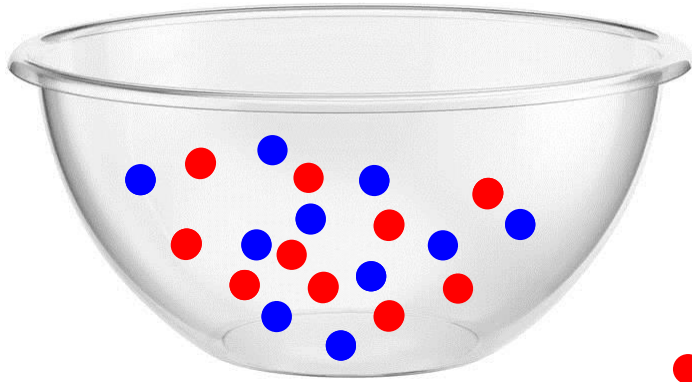


● 5-star

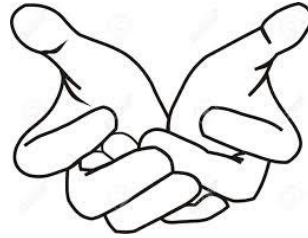
● 1-star

# Inheritance patterns of DNA

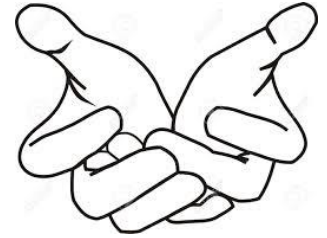
● 3-star



● 1-star



● 5-star

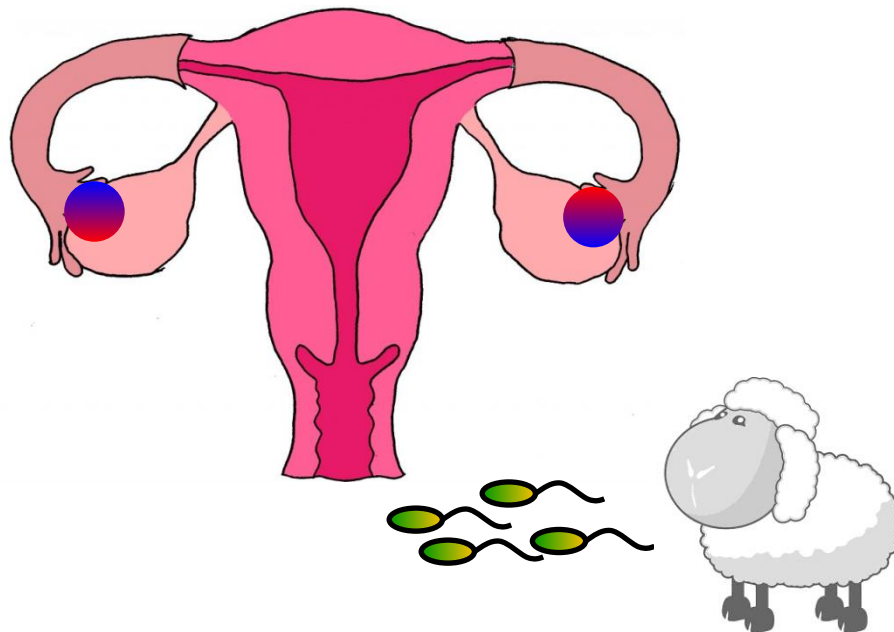


● 5-star

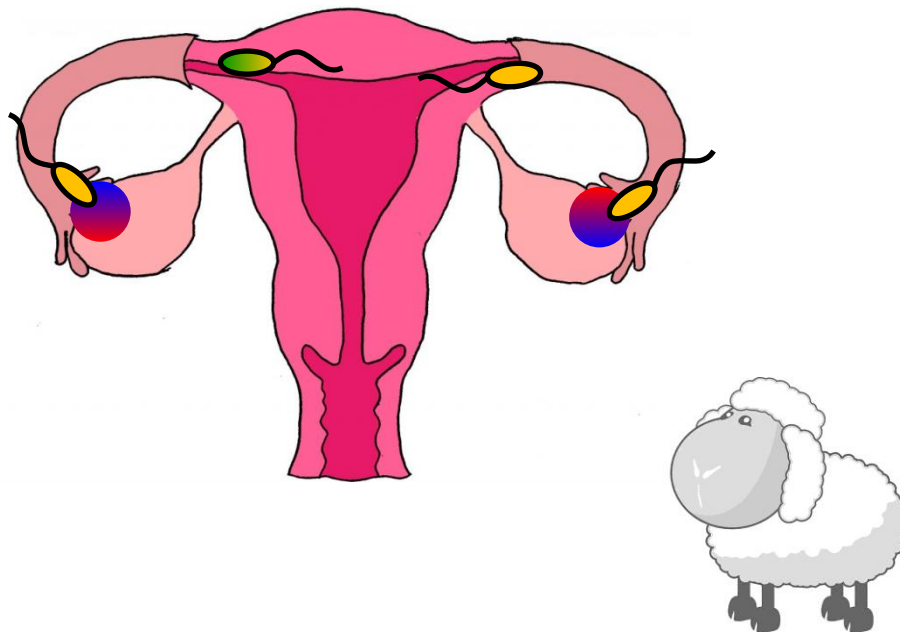
● 1-star



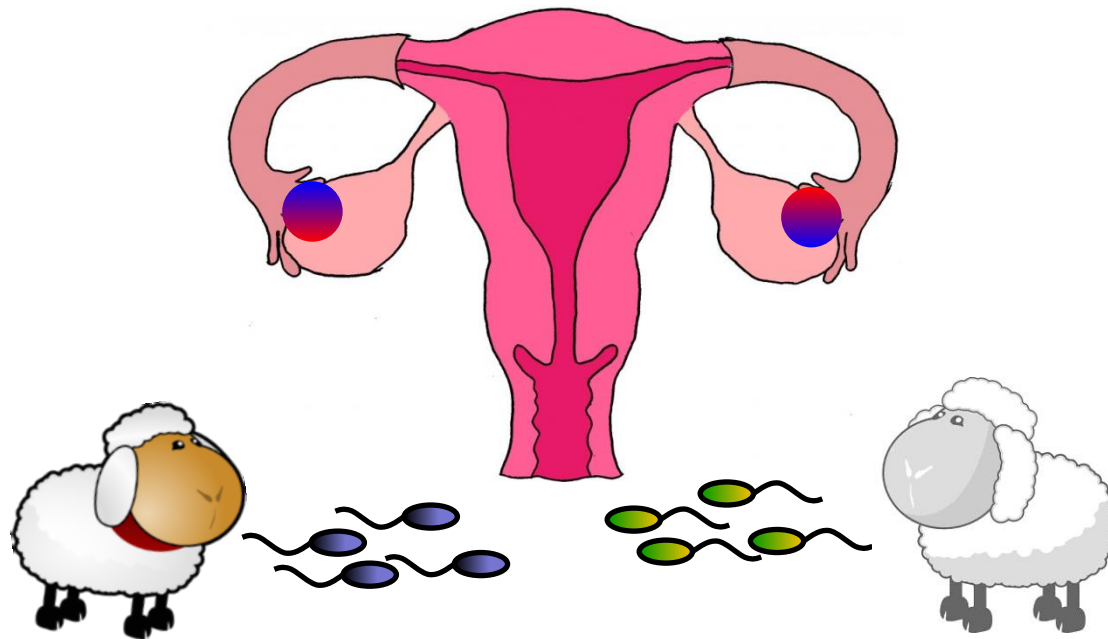
# Multiple ovulation & single sire mating



# Multiple ovulation & single sire mating



# Multiple ovulation & mob-mating

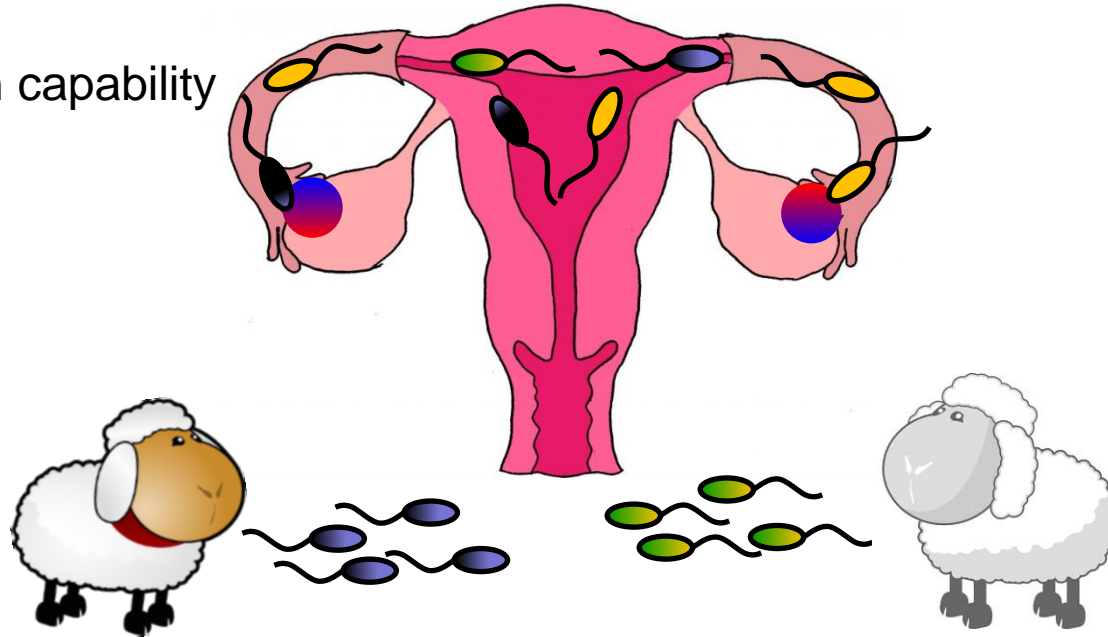




# Multiple ovulation & mob-mating

~50% probability

- Fertilisation capability



# Heteroparental superfecundation



Opinion Sport Culture Lifestyle More

## One set of twins - two fathers: how common is superfecundation?

Heteropaternal superfecundation will be tackled in a new romcom - but it happens in real life, too. Two experts explain how



The Hetero-paternal Superfecundation : Twins From Different Fathers ?



Twins from different fathers?  
The heteropaternal Superfecundation.

[\(image source\)](#)

Hello, Fellow steemians! I Hope everyone is doing well. Its nearly been a month since my last post, today I will be discussing an interesting science topic which I'm pretty sure you had not heard of before!

The Journal of Maternal-Fetal and Neonatal Medicine 2003;14:217-219

## Editorial

### Superfecundation and superfetation: lessons from the past on early human development

Isaac Blickstein

Department of Obstetrics and Gynecology, Kaplan Medical Center, Rehovot, Israel

doi: 10.1111/age.12619

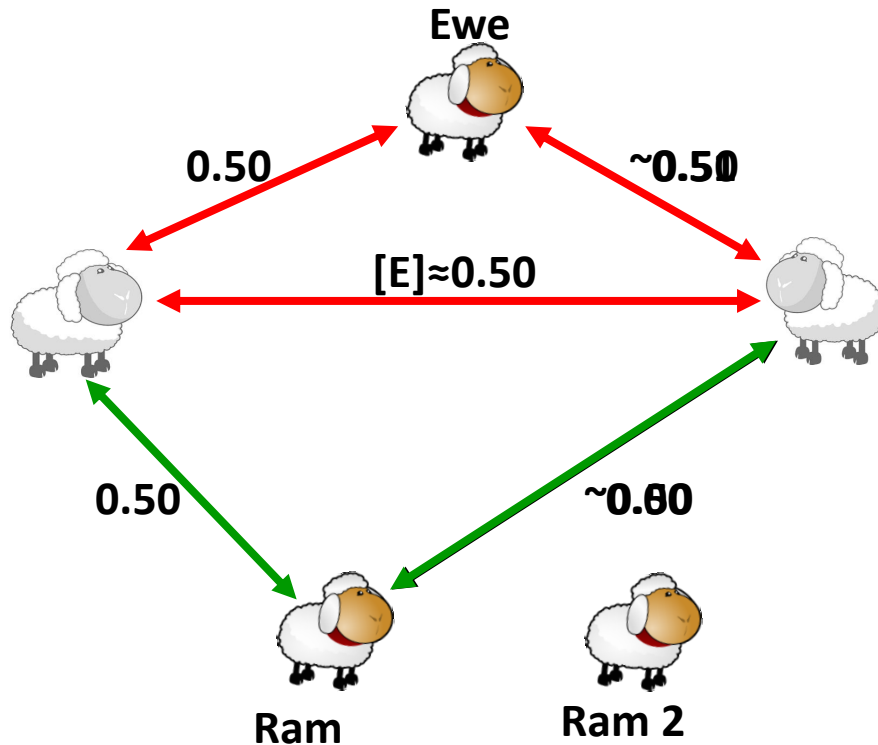
### Rate of bovine heteropaternal superfecundation in the Irish National Herd: twins with different sires

**Matthew C. McClure, Jennifer C. McClure and John McCarthy**

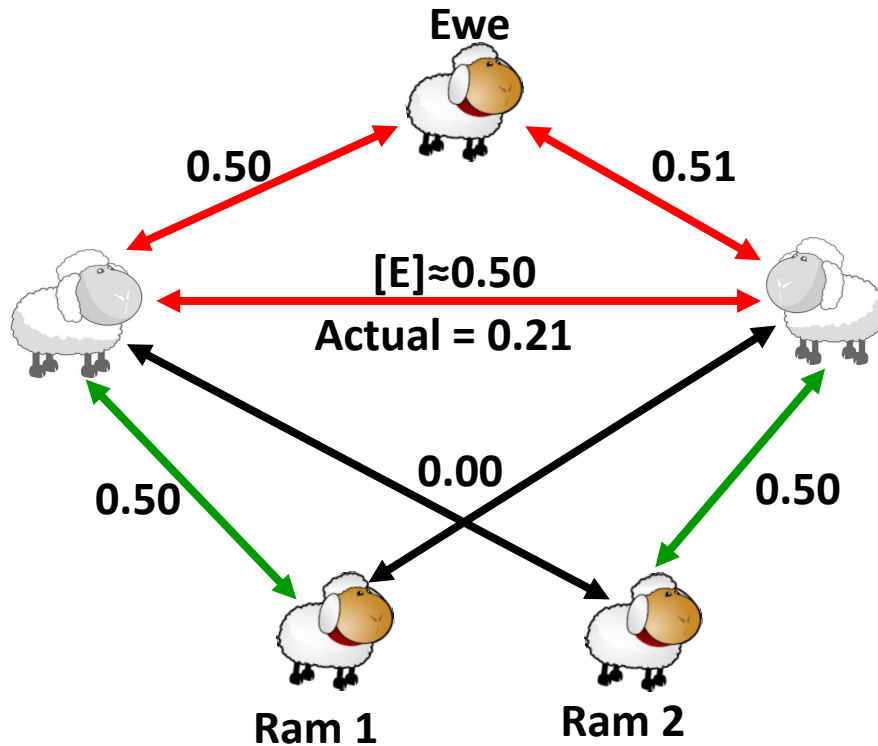
Irish Cattle Breeding Federation, Bandon, Co. Cork, Ireland

Accepted for publication 12 September 2017

# Does it really happen (actual example)



# Does it really happen (actual example)



**33% incidence  
on one farm**

# Implications

- **Is the parentage truly correct?**
  - **Certs**
  - **Genetic evaluations - star ratings**
  - **Mating advice/inbreeding**
- **Only for mob-matings, ram changeover, ET, & multiple AI**
  - **Not a big issue**
- **Genomics can solve**

# Take home message

- Genomic evaluations are based on better relationships
- DNA provides information to generate more accurate relationships
- Heteroparental superfecundation does occur in all species
  - Likelihood is greater in pluriparous species (sheep)
  - Likelihood greater in multi-sire matings
  - Has practical implications
  - Solutions (DNA) exist
    - With additional benefits

