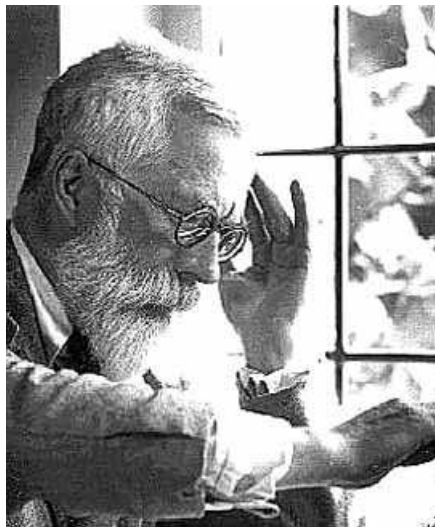


# Sir Ronald Aylmer Fisher (1890–1962): statistician and geneticist



A **block** is a group of experimental units which are thought to be relatively homogeneous, i.e. which will give relatively similar results.

## Examples:

- paired half-pieces of rubber
- siblings
- farms

## Blocking

Whenever possible, design your experiment so that comparisons of interest can be made within the same block.

**How should you choose which units receive which experimental treatment?**

## **Randomisation:**

- **within any block, allocate treatments to experimental units at random;**
- **to avoid conscious or unconscious bias in the allocation of experimental treatments to experimental units;**
- **and (sometimes – but more often than you might think) ensure validity of statistical inferences**

# Identifying sources of variation

## Before you run an experiment:

- list the possible sources of variation in the results;
- design the experiment to eliminate extraneous sources of variation from comparisons of interest;
- if it is not possible to eliminate an extraneous source of variation, use random allocation to avoid bias

## Example:

In the paired experiment:

- pairing eliminated extraneous variation in the longitudinal direction;
- randomisation eliminated any possible bias due to variation in the transverse direction