3 R's

As biomedical researchers conduct experiments on animals, they must follow the moral principles of the 3 R's...

**Reduction**

*Reduction* concerns experimenting on fewer animals to obtain required data.

For example, improved scanning techniques allow researchers to non-invasively study tumors and collect more data from the same animal, rather than multiple.

**Refinement**

*Refinement* involves improving animal welfare and procedures so unnecessary distress or pain isn’t caused.

This includes:
- Keeping the animals in living conditions appropriate for their species
- Providing animals environmental enrichment to ensure the overall well-being of the animals

**Replacement**

*Replacement* is the principle of animals always being replaced with non-animal substitutes, when possible.

Alternate methods include computer models, cell and tissue culture, and epidemiological studies.