How Modern Science is Replacing Failed Animal Testing

Disease or Test	What happened with animal testing?	Modern human-based, animal-free solution	What can scientists do now?
Liver damage	Some medicines appeared safe in animals but later caused liver failure in people.	**Human Liver-on-a-Chip**	Correctly identified **87%** of medicines that caused liver damage in humans.
Skin irritation	Rabbit skin tests did not always predict how human skin would react.	**3D human skin models**	Already accepted around the world to replace rabbit tests.
Eye irritation	Rabbit eye tests sometimes gave different results from human eyes.	**Human cornea models**	Uses human cells that actually represent the human eye.
Cancer	Around **96%** of cancer medicines that worked in animals failed in people.	**Patient-derived tumour organoids**	Scientists can grow a patient's own tumour and test medicines directly on it.
Alzheimer's disease	More than **99%** of Alzheimer's drugs successful in mice failed in people.	**Human brain organoids**	Allows scientists to study human brain cells directly instead of mouse brains.
Stroke	Over **1,000** treatments worked in mice but none cured stroke in humans.	**Brain organoids and brain-on-chip models**	Studies how stroke affects human brain tissue.
Chemical safety	Animal tests correctly predicted harmful chemicals only about **69%** of the time in one comparison.	**Artificial Intelligence (RASAR)**	Predicted harmful chemicals about **89%** of the time.
Fever testing	Rabbits do not always respond to fever-causing substances like humans.	**Human immune cell tests (MAT)**	Uses human blood cells and has replaced rabbit tests for many medicines.
Cancer drug approval	New cancer medicines traditionally relied on animal studies to show they worked.	**Human vascularised organoids**	In **2024**, the **FDA** accepted the first cancer drug application supported solely by human organoid studies instead of traditional animal efficacy testing, allowing the medicine to begin **human clinical trials**.