

Computer Science and Animal Testing for Heart Drugs

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Background Information

- Rats, mice, rabbits, guinea pigs, dogs, and pigs are all used to test human products
 - this only allows a 75% - 85% accuracy
 - Causes products to be withdrawn due to cardiovascular issues
- Computer models of the heart began to be experimented with in the 1960s

New Research

- University of Oxford has found that computational models of a heart are more accurate of predicting drug effects
 - 89% - 96% more effective than animal testing
- Computer models can show how drugs may affect the heart on different scales from a single cell to the whole heart
 - Can show healthy vs. diseased condition hearts

Software: Virtual Assay

- Used to run computer simulated drug trials
- Some pharmaceutical companies are already using this

Future Research

- Currently looking at a few cells in the heart through a computer model only takes a few minutes
- A 3D model would take a lot of computer power
 - One heartbeat may take 3 hours
- There is a European project trying to simulate the whole body, that they call a virtual human