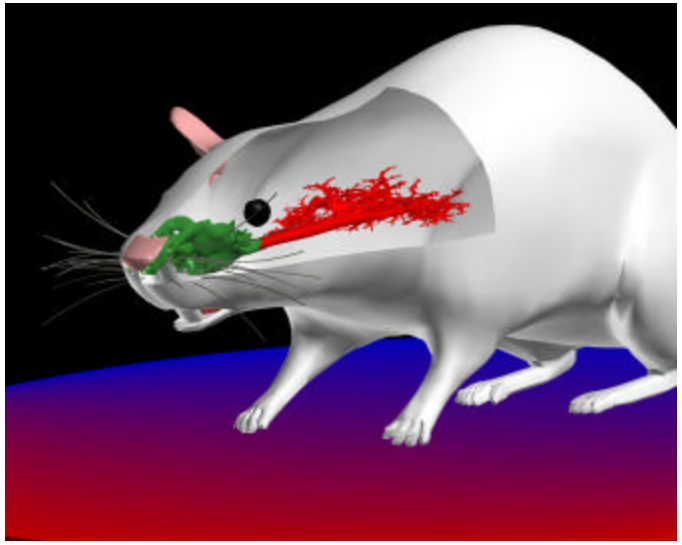
Pilot-CSEI3 Highlight

PNNL

Virtual Lung and Nose Modeling with NWGrid and NWPhys



A virtual lung model may predict the impact of pollutants on respiratory systems and provide new insight on asthma and other pulmonary diseases. With nuclear magnetic resonance (NMR) technology, laboratory scientists captured images of a rat's upper respiratory tract and lungs in unprecedented detail. Then using the powerful capabilities of supercomputers and a semi-automated software package called NWGrid analyzed the data, reconstructed it into a computer model and integrated information to show how airflows carrying particles might move inside the imaged respiratory tract during breathing. The parallelized gridding program translates raw NMR data into a computer image very quickly. This increased speed will allow for replication of the studies, with greater precision and will allow for the creation of a database of information on healthy and diseased lungs. Efforts are underway to similarly model the respiratory systems of monkeys and humans.
http::/www.emsl.pnl.gov:2080/nwgrid