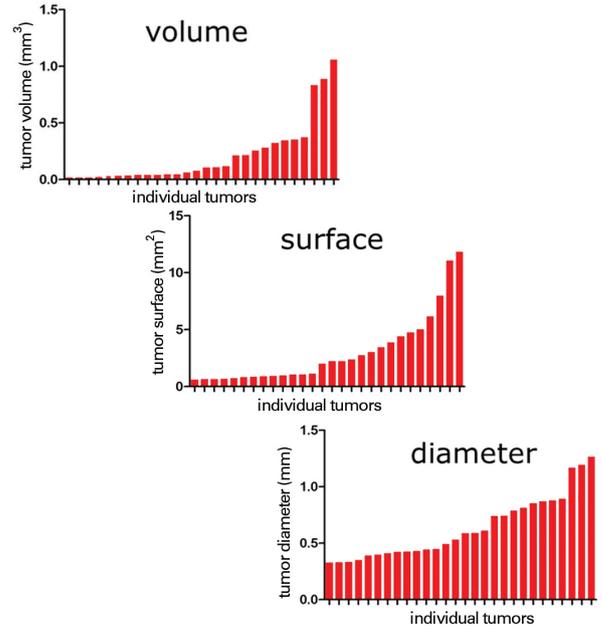# Imaging & Analysing Lung Tumors
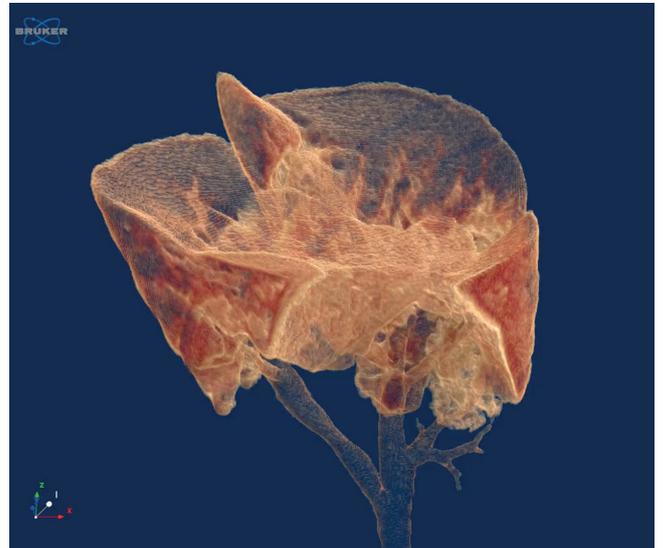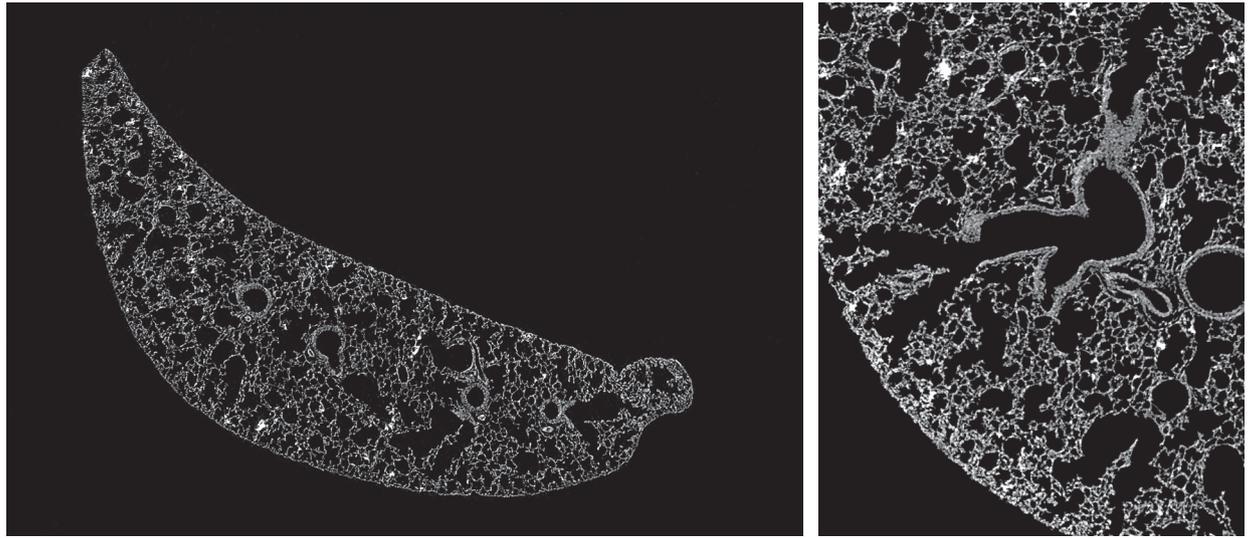
- With High Resolution microCT

Innovation with Integrity

Surface rendering image of a mouse thorax showing the lung (blue) and peripheral nodules (red) scanned using the high resolution *in vivo* scanner SkyScan 1276 at 35µm pixel size.

In vivo analysis of individual tumors with a detectability < 200µm diameter.
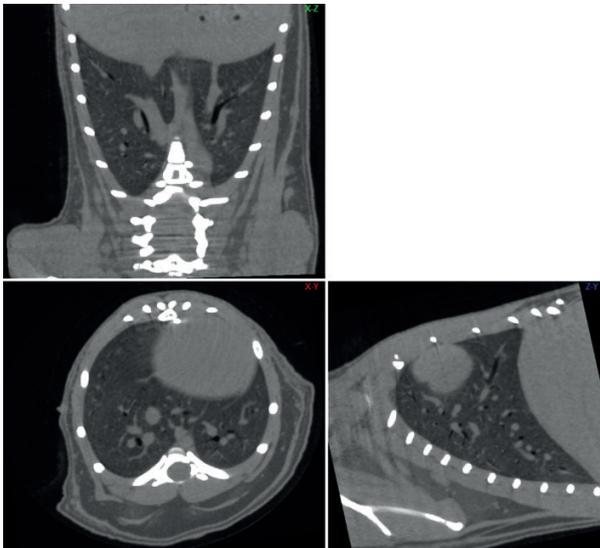
Time or image-based gating allows imaging of the lung and calculation of it's volume upon breathing, separating airways from blood vessels and discrimination between different lung lobes. Reconstructed cross-sectional images and volume rendered 3D model of a mouse lung, scanned *in vivo* at the SkyScan 1276 at 26µm pixel size.

Reconstucted cross-sectional slice (left) and higher magnification inset (right) through a mouse lung scanned in the SkyScan 1272 at 1µm pixel size after chemical drying. At this resolution, alveolar walls can be visualized and quantified besides the airways and blood vessels.

5µm
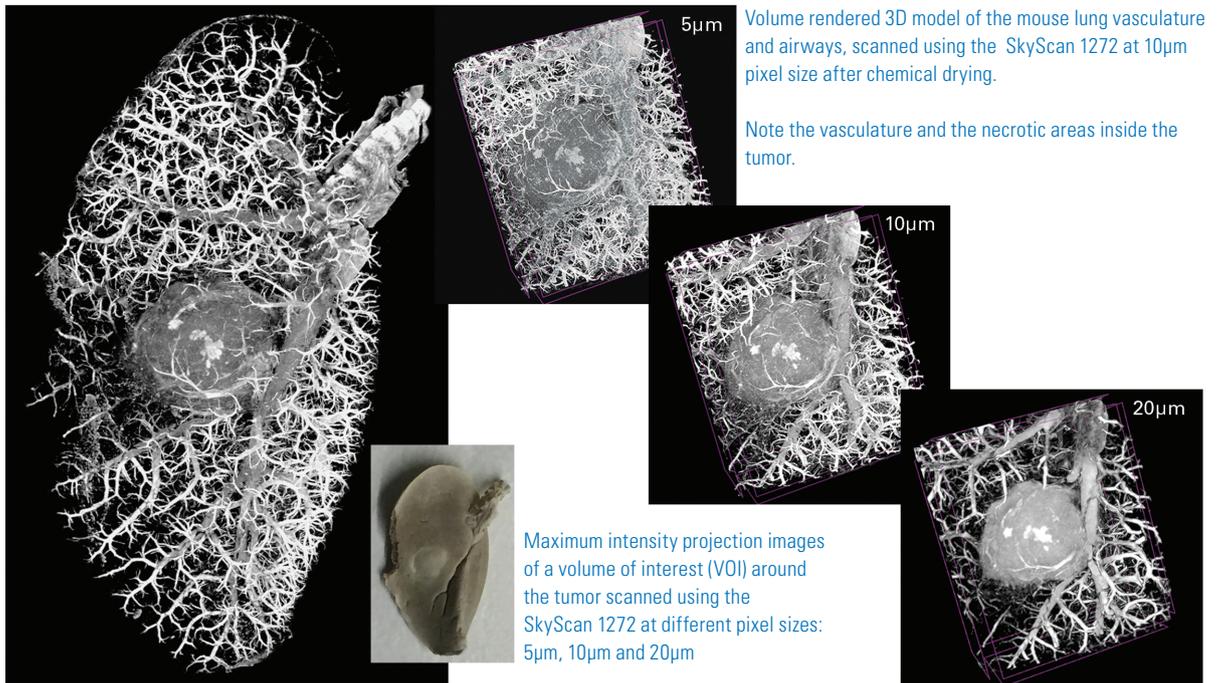
Volume rendered 3D model of the mouse lung vasculature and airways, scanned using the SkyScan 1272 at 10µm pixel size after chemical drying.

Note the vasculature and the necrotic areas inside the tumor.

10µm

20µm

Maximum intensity projection images of a volume of interest (VOI) around the tumor scanned using the SkyScan 1272 at different pixel sizes: 5µm, 10µm and 20µm

SkyScan 1276

High resolution *in vivo* micro-CT

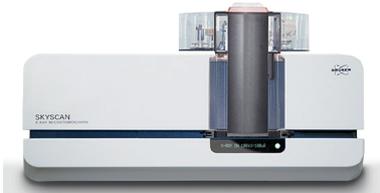|	
X-ray source	20-100kV, 20W, <5µm spot size @ 4W
X-ray detector	11Mp, 14-bit cooled CCD
Scanning space	80mm in diameter, >300mm in length
Spatial resolution	2.8µm smallest pixel size, 5-6µm details resolved with more than 10% contrast
Reconstruction	Hierarchical (Instarecon®) and multithreaded CPU/GPU 3D reconstruction
Dedicated software package for acquisition, reconstruction, dataviewing, 3D modeling and image analysis	

SkyScan 1272

High resolution *ex vivo* micro-CT

X-ray source	20-100kV, 10W, <5µm spot size @ 4W
X-ray detector	16Mp or 11Mp, 14-bit cooled CCD
Maximum object size	75mm in diameter, 70mm high
Reconstruction	Hierarchical (Instarecon®) and multithreaded CPU/GPU 3D reconstruction
Detail detectability	0.35µm (16Mp) or 0.45µm (11Mp) smallest pixel size
Dedicated software package for acquisition, reconstruction, dataviewing, 3D modeling and image analysis	

SkyScan 1275

High throughput micro-CT

X-ray source	20-100kV, 10 W, <5 µm spot size @ 4W
X-ray detector	3Mp active pixel CMOS flat panel
Maximum object size	96mm in diameter, 120mm high
Detail detectability	4µm smallest pixel size
Reconstruction	Multithreaded CPU/GPU 3D reconstructions
Dedicated software package for acquisition, reconstruction, dataviewing, 3D modeling and image analysis	

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