



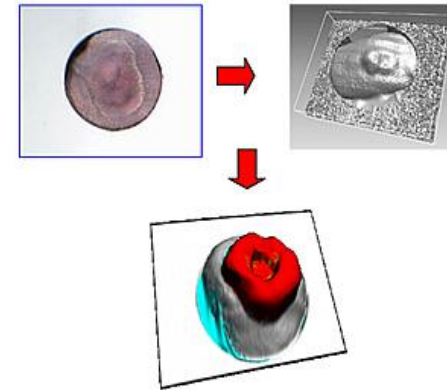
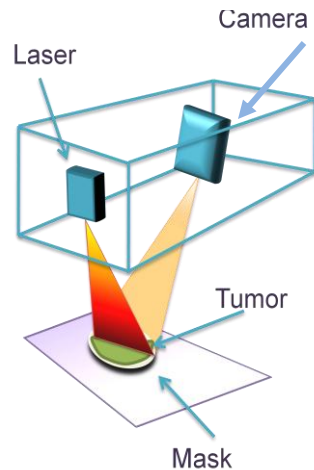
Fully Automated Subcutaneous Tumor Measurement & Tracking System

- Make accurate tumor volume measurements
- Eliminate manual data transcription errors
- Reduce operator dependence
- Decrease manual repetitive tasks
- Increase productivity
- Reduce labor costs (up to 50%)
- Reduce animal costs (up to 35%)
- Validate cross-laboratory results
- Shorten time to IND

Tumor Management System

A Complete Solution for
Subcutaneous Tumor
Measurements

TumorImager™ provides the most accurate results...



TumorImager™

TumorImager™ is a 3D laser scanning device for subcutaneous tumor measurements on small lab animals. It uses a laser and camera system that projects a laser line on the tumor to be measured. As the laser line moves over the tumor placed within the mask, the camera takes pictures of the line and calculates the x, y, and z coordinates of the surface of the tumor. The patented algorithms then segment the tumor out of all the data points and calculate the volume.

TumorImager™ measures the volume of necrotic tumors as well as odd shaped tumors. The volume of such tumors cannot be measured accurately using calipers.

Comparison with Caliper Measurements

Function	Caliper	TumorImager™
Average deviation ¹	-0.36	-0.02
Operator dependency ²	13.8%	1.5%
Measurement time ³	7-10sec	3-5 sec
Recording time ⁴	9sec	0sec
Tumor shape dependency	Half ellipsoid	NA
Tumor size	Any	0.5-2.5cm
Operators needed	1-2	1

1. Average of deviations from plethysmometer measurements (mm³)
2. Average difference between 3 operator measurements.
3. Time for making one tumor measurement.
4. Time to record results to paper/Excel or to a database.

- Accurate volume measurements
- Fast (Results in 3-5 seconds)
- Real time data analysis
- Sedation of animals for measurement process is not required
- Highly Reduced operator dependence
- Shape independent measurements
- Measure necrotic tumors accurately
- Save scanned tumor images automatically for further analysis
- Validated data



TumorManager™ automates data management ...



The integrated program controls the scanner plus collects and manages tumor data for oncology drug discovery research. It consists of study protocol creation; tabular and graphical presentation of individual and group animal volume, weight and clinical observational data; real time tumor metric calculations; statistical analysis; survival tests; integrated randomization of animal grouping; cage handling; task management; and extensive reporting of results.

Comparison with Current Processes

Function	Typical Lab	TumorManager™
Data recording	Spreadsheet	SQL Server Database
Statistics	Limited	Extensive
Data protection	Password	Database, password, task and user dependent
Tumor metric calculations	If calculated they are not real time.	Real time calculations of Volume, TDT, LogCellKill etc.
Data display	Requires programming	Real time table/ graphs
Animal grouping	Either manually or by use of a program	Integrated
Reports	Tables, manual transfer to Word, pdf, Excel etc.	Integrated

TumorManager™

- **Multiple data entry**
TumorImager™
Balances
- **Multiple Tumor Metrics**
T-C, TDT, TGI, TVDD
Log Cell Kill
Tumor Inhibition
- **Protocol driven**
Study creation
Measurements
Task scheduling
Dosing
Animal Fate
User defined terms
- **Animal Randomization**
Animal ID
Tumor Volume
Body Weight based
- **Statistical Analysis**
Descriptive
Normality, Homogeneity
Correlation
ANOVA
Multiple Comparisons
- **Reports**
39 reports
Word, PDF and html exports



Tumor Management System: A Complete Solution

TumorImager™

Specifications

- Measurement range, x axis 41 mm
- Start of measurement range along x axis 2.5 mm (before the mask)
- End of measurement range along x axis 37.5 mm (after the mask)
- Camera working distance 100 mm
- Maximum tumor size along x-y 25 mm
- Maximum tumor height 20 mm
- Tumor scan time 3-5 s
- Resolution, z axis 0.04% (10 μm)
- Linearity, z axis (±3 sigma) 0.2% (50 μm)
- Light source laser diode 655 nm, 15 mW
- Laser class Class 2M
- Computer Interface Firewire and USB 2.0
- Interface cable length Up to 6ft
- Measurement range, y axis 35 mm
- Measurement range, x axis 41 mm

TumorManager™

Specifications

- Windows based functionality with data entry through mouse, touch screen, and foot pedals.
- Program limits: 20 groups/study, 100 animals/group, 20 drugs/study.
- Animal identification system interface.
- Serial balance interface.
- Laptop system controller (provided as part of the system)

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