

# FS-MICUS-1

Small Animal Micro-Ultrasound Imaging System

Ultra Array Processing SINA



ULTRA [ARRAY]  
PROCESSING SINA

# About us

The research activity of this company has been started from year 2014 (from the time of initiating the technologic core of the company) with focus on biomedical array signal processing and recording (EEG), ultrasound array signal processing and image reconstruction (Micro-ultrasound), transcranial focused ultrasound brain stimulation (tFUS), and multimedia array signal recording and broadcasting fields.

Up to now, this company, has been successful on developing of experimental prototypes, semi-industrial and industrial versions of above mentioned systems to be employed at research laboratories and the R&D department of the company is continuously working on promoting the developed products to be presented soon.



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# Specification

## System Specifications

### Imaging Modes:

- Standard B-Mode
- Basic M-Mode
- PW Doppler Mode

### System Electronics:

- Analog Frequency Range: 6-20 MHz
- Receive Channels: 8
- Single, adjustable transmit focal zone
- Max frame rate: 120 frames/second

### Data Management:

- Data Export: avi, tiff, bmp, gif, raw, csv, DICOM

## TRANSDUCERS

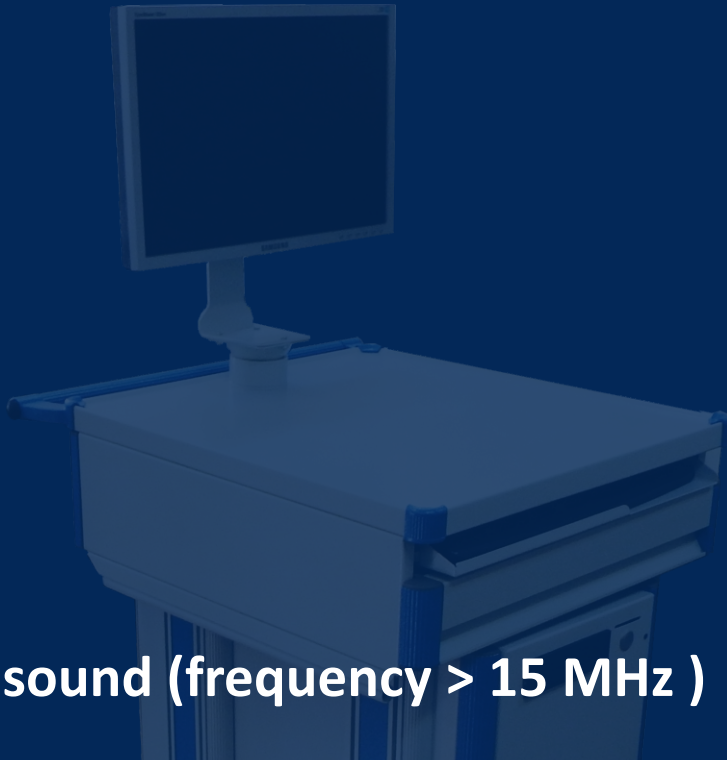
One Broadband linear array transducer (up to 18MHz) that allows for routine scanning of small animals at frame rates up to 120 frames/second, resolutions down to 200 microns, Color Flow Doppler Mode

## ENVIRONMENTAL SPECIFICATIONS

Temperature 10°– 40°C (50°–104°F)  
Relative Humidity 15–60% non-condensing



# RESOLUTION



Small animal ultrasound (frequency > 15 MHz )

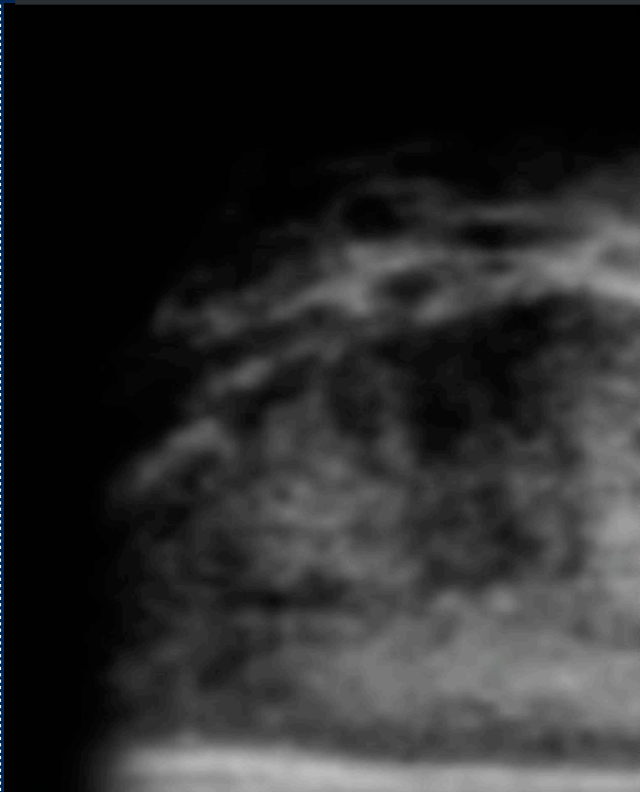
<p>20 cm</p> <p>3 - 15 MHz</p>	<p>Melon</p>	<p>Conventional clinical ultrasound (human fetus)</p> <p>200 – 300 micron resolution</p>
<p>3 cm</p> <p>15 – 70 MHz</p>	<p>Coffee Bean</p>	<p>Micro-ultrasound (mouse fetus)</p> <p>30 micron resolution</p>

# Benefits

- Cheapness of experiments
- Easy portability
- Non-ionizing
- High Resolution Time (120 fps)
- Spatial resolution (up to 200  $\mu\text{m}$ )
- High sensitivity to micro-bubbles

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**Conventional Ultrasound**



**cm Scale**

**Micro Ultrasound**

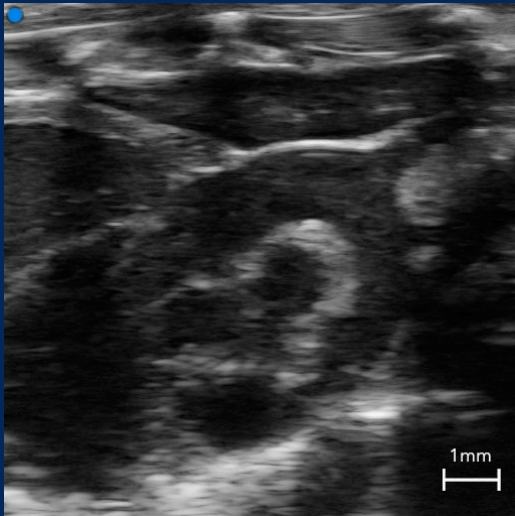


**mm Scale**

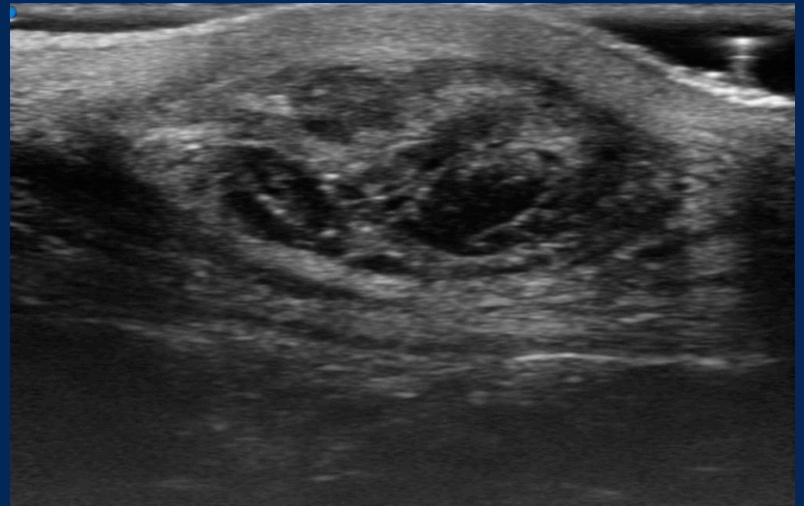
# B-Mode (Brightness)

B-Mode imaging to identify anatomical structures

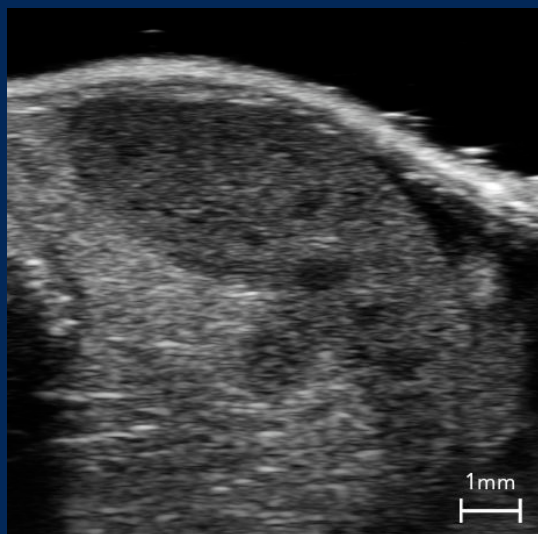
B-Mode (Brightness)



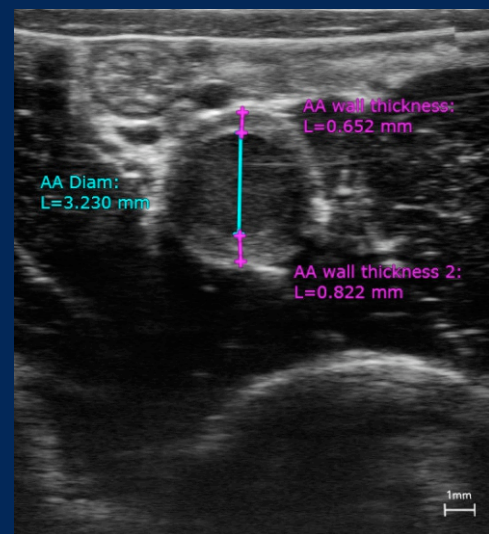
B-Mode image of the aortic arch of a mouse



Post Op Scars from open hearts surgery



B-Mode image of the spleen in a mouse.



Abdominal aorta in a rabbit imaged in B-Mode with thickened walls highlighted

# Micro-Ultrasound (MUS) Probe

Enabling Translational Studies from Labs to clinics:

- Monitoring diseases mechanisms
- Evaluation of new drugs effects
- Evaluation of therapeutic processes

Description:

Wide-band high frequency linear array

Applications:

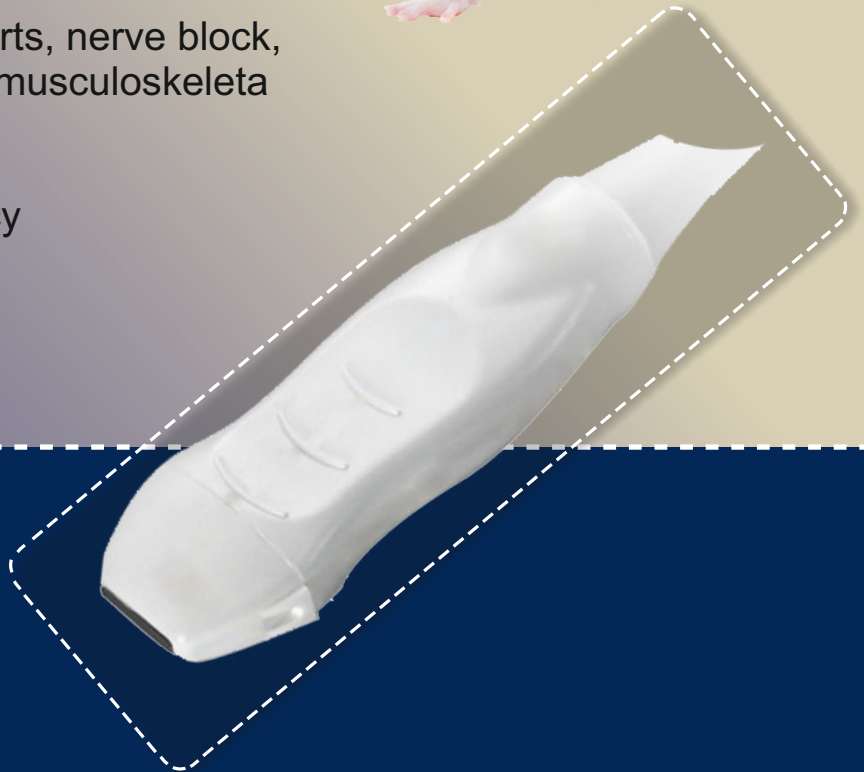
Peripheral vascular, small parts, nerve block, conventional and superficial musculoskeleta

Bandwidth:

11-20 MHz Imaging frequency

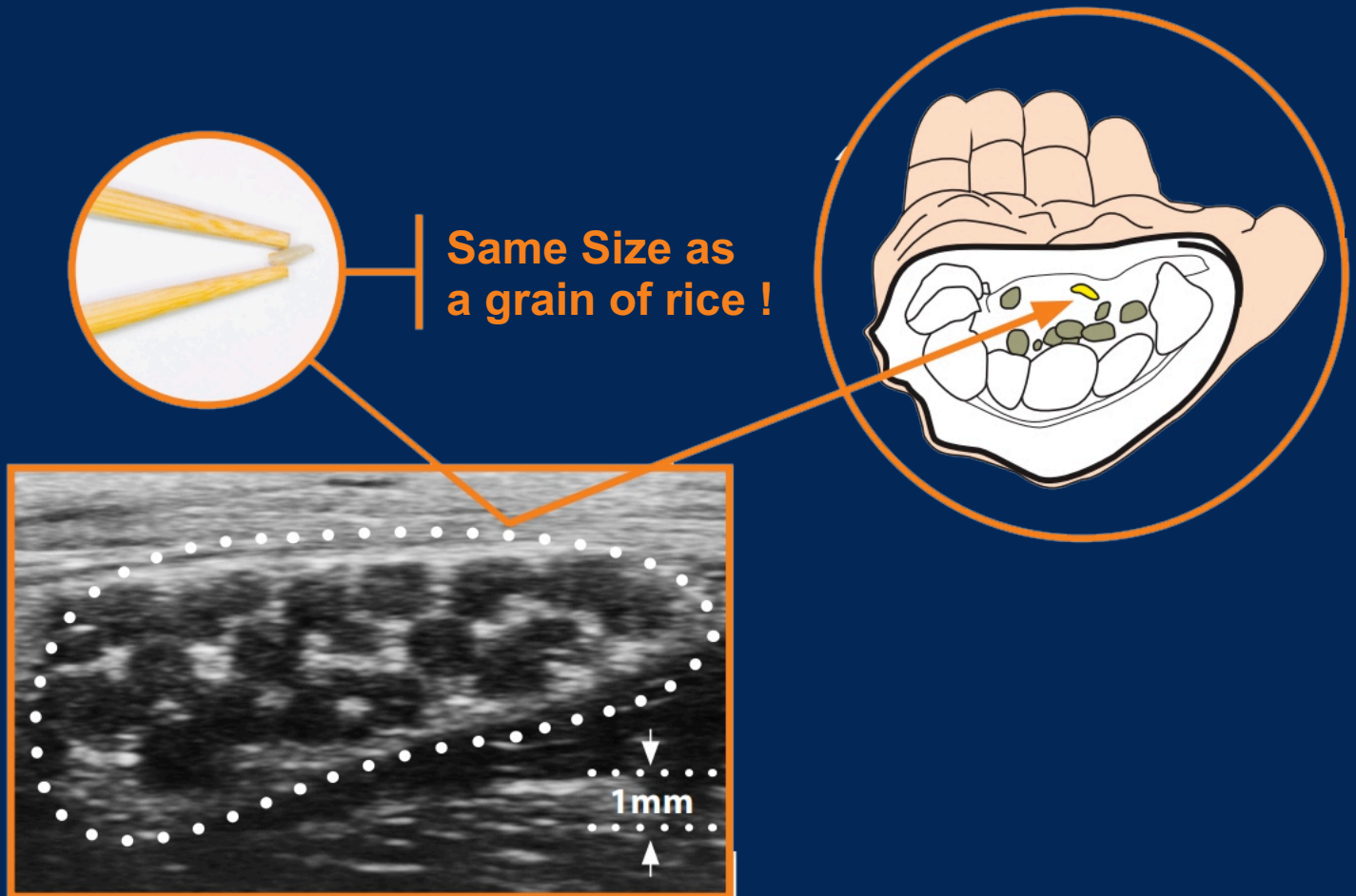
Biopsy Guide:

N/A



Lightweight and ergonomically designed transducers with a wide range of frequencies to provide the flexibility you need for your small animal studies

Imagine the potential of such ground-breaking technology and its impact on the medical field to see what has never been seen before. When it comes to patient care and uncovering the smallest and most detailed information, the FS-MicUS-1 is the most revolutionary ultrasound technology to come along in decades.



Ultra high frequency means the highest resolution diagnostic ultrasound available today. This ground breaking development opens up new possibilities for medical imaging that have never been seen before. Whether imaging tiny infants in the neonatal ward, detecting the tiniest of suspicious lesions or monitoring the subtle changes in blood flow in the major arteries of the body, the **FS-MicUS-1** produces unparalleled image resolution. Resolution as fine as  $200\ \mu\text{m}$ . Yes,  $200\ \mu\text{m}$ . That is less than half the size of a grain of sand.





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