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Needle Placement System Provides Details for Tissue Model

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Life Sciences/Medical Devices

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Accurate Needle Placement during Sensitive Medical Procedures

Accurate needle placement can be obtained with a biofeedback based strain sensing and tissue modeling needle system. Many medical procedures, especially minimally invasive procedures, require accurate needle placement of a needle tip relative to internal organs and tissues. Complications and recovery times decrease with more precise placement of the needle tip. Electronic guidance would assist in consistent accurate needle placement during procedures. Current methods offer limited visualization of needle placement in real-time. Needle systems exist for placement in fluid-based locations where there is an easily discernible pressure difference between the target and proximal sites, such as the spinal column during epidural administration; however, there remains a need in the market for a technology that assists in needle placement in tissue.

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Digital Tissue Model Created with Needle System

This invention uses strain gauges placed on at least two separate locations on a needle to measure insertion force present at the needle tip. This process provides biofeedback that creates a digital tissue model, allowing physicians to visualize tissue structures located within another body of tissue in real-time. This process facilitates accurate needle placement relative to organs. This method will allow accurate needle placement in locations where there are not clear boundaries between specific tissue structures. More accurate biopsies and treatments can be performed, increasing success rates, decreasing recovery times, and decreasing complications.

BENEFITS OF NEEDLE PLACEMENT AND METHOD:

- Tissue model alerts physician to location of needle tip relative to organs
- No need for MR assisted needle guidance
- Immediate notification of strain on needle reduces procedure time associated with accurate needle tip placement
- Reduces complications and side effects associated with procedures requiring accurate needle tip placement

Fulfillment Details Licensee will receive rights to practice the issued patent for the purposes of developing and manufacturing a commercial product.

Phase of Development Prototype Development: Prototype developed with some human tissue (cadaver) testing

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