

A Device for Precision Microdissection of Tissue

Category

Microdissection Device

Problem

Conventional microdissection methods are difficult, expensive, and often result in impure samples

Technology Overview

A device that uses air pressure to extract cells from tissue sections in conjunction with a dissecting microscope

IP Status

- ▶ Patent Pending
- ▶ Available for Exclusive or Non-Exclusive Licensing

Advantages

- ▶ Reduces sample contamination
- ▶ Cost effective
- ▶ User Friendly

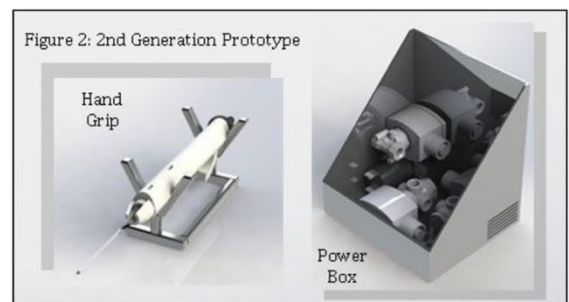
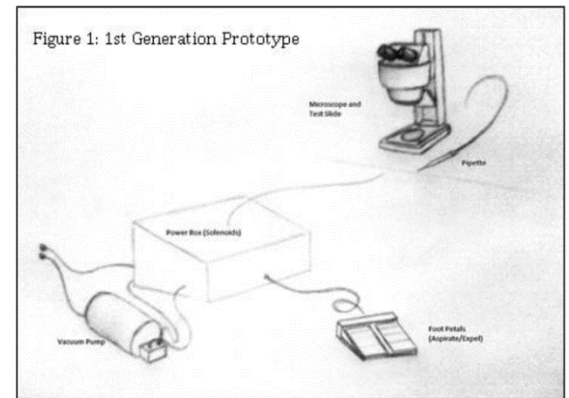
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Problem: It is essential that pathologists can isolate specific cells from larger tissue samples, enabling more accurate analysis without contamination from other cells. Conventional microdissection methods for obtaining a desirable cell sample involve cutting a desired area on tissue with a laser light or using a mouth pipette to aspirate the sample. When micropipetting by mouth there is a risk of aspirating dissected cells and fluids or contaminating the specimen with the operators own cells. This leads to impurities that affect the accuracy of the subsequent analysis and diagnosis. Moreover, the necessary laser equipment is often expensive, time consuming, and high maintenance. There is a clear need for an apparatus that is more cost-effective and easier to use.

Solution: A University of Colorado research team has developed a pneumatic cell sorter that uses air pressure for precise extraction of cells from a larger tissue section. There are two iterations of this device, as displayed in Figures 1 and 2. Figure 1 shows a cell collector that is controlled by two foot pedals that adjust the flow of pressure, allowing the user to have both hands free to use the microscope and micro-dissection pipette. The second figure shows a system that is controlled by switches on the handgrip, which also houses the pipette. Paired with a dissection microscope, cells of interest can be identified and dissected from tissue with the pipette, freeing them from the underlying glass slide. Using the foot pedals or handgrip, the vacuums can be activated, pulling the freed cells into the body of the pipette. Once collected, the cells can be expelled from the pipette by reversing the flow of the vacuum system.



Advantages and Value Propositions

In the US, around 8 billion tissue samples are submitted for processing yearly. The laser capture microdissection market is forecasted to increase to \$251 million by 2026 from \$101 million in 2018, giving it a CAGR of 12.01%. This cost-effective and user friendly device allows for easy manipulation, observation, and collection of the desired cell sample. It eliminates the need to trace tissue samples with laser light, and thereby reduces the risk of sample contamination. Samples that are dissected using this technique ultimately contain more cells of interest to the pathologist and as a result, may improve clinical decision making.

Additional Documents and Sources:

“Cell Collecting Apparatus and Method of Use.” Nationalized to the U.S. PCT filed April 25, 2013; available under NDA.

About CU Innovations

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