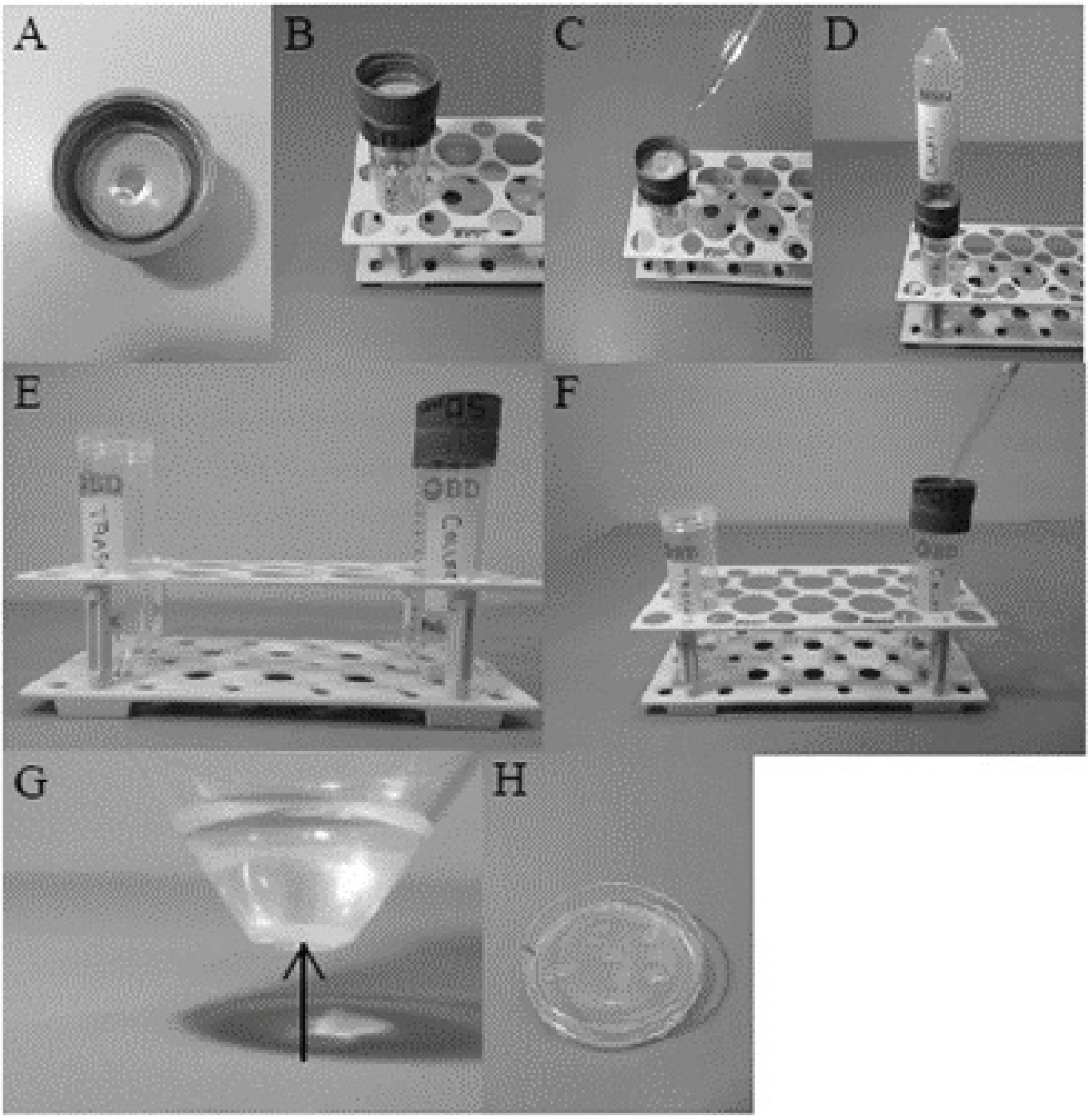
Methodology And Tool For Mechanically Sorting And Cleaning C. Elegans

University of Alaska Fairbanks



The nematode worm, Caenorhabditis elegans (C. elegans), is a premier model organism for genetic studies across a range of basic and biomedical research. In addition to the straightforward and controlled nature of their cultivation in

the laboratory, their entire genome is sequenced and the developmental fate of each cell is known.
However, along with these beneficial characteristics come some challenges. Within the nematode research community, there is a need for an affordable and effective way to maintain large, age-matched populations of C. elegans.

Due to their rapid generation time, C. elegans populations can quickly run out of food and/or become mixed populations with multiple generations and developmental stages present at once. Thus, experiments performed on solid nematode growth media (NGM) require researchers to physically move animals to fresh plates before the bacterial food source depletes and new larvae develop. This can be time-consuming and detrimental, as a frequent transferring of the animals is required to prevent the experimental populations from becoming mixed with offspring generations.

Still, some experiments require both large numbers of animals and extended time points (e.g., DNA or RNA extraction in adulthood). This compounds the challenges of accurately maintaining a synchronized population and transferring large numbers of animals.

> *Scientists at the University of Alaska Fairbanks have provided a methodology and tool for mechanically sorting and cleaning C. elegans in a cost-effective, efficient, fast, and simple process to obtain animals of uniform sizes and life stages for their use in experiments.*

This tool, the Caenorhabditis Sieve, uses a custom-built lid system that threads onto common conical lab tubes and sorts C. elegans based on body size. The Caenorhabditis Sieve effectively transfers animals from one culture plate to another allowing for rapid sorting, synchronizing, and cleaning without impacting markers of health, including motility and stress-inducible gene reporters. This accessible, affordable, efficient, and innovative tool and associated protocol for its manufacture and operation is a fast, efficient, and non-stressful option for maintaining C. elegans populations that can improve biomedical research and meet the need of the research community.

A utility patent application was filed on the technology for the sieve tool and sorting methodology through UAF's Office of Intellectual Property and Commercialization (OIPC). The technology has also been previously licensed through OIPC for commercial manufacturing and sale throughout the United States.

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