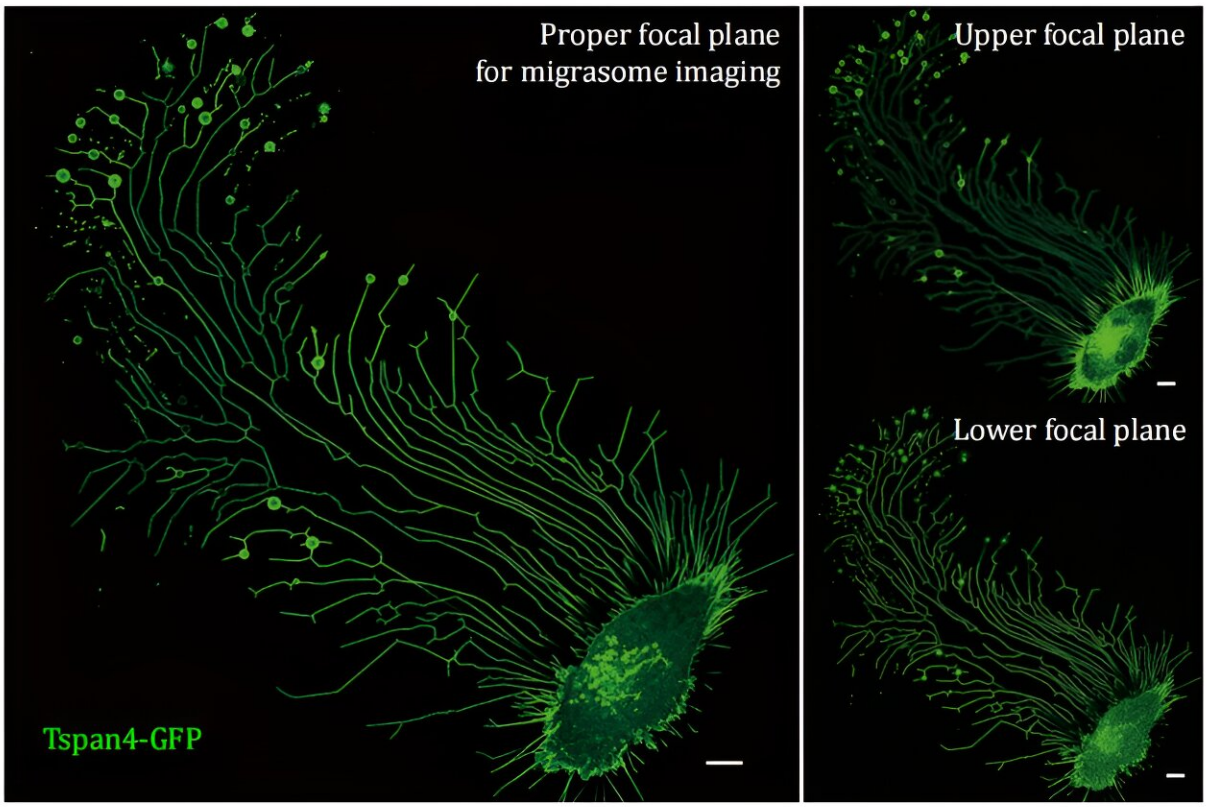
Seeing is believing: Observation of migrasomes

May 7 2024



Migrasome images of Tetraspanin4-GFP over-expressed L929 cells were collect ed by confocal microscopy at a proper focal plane
or improper (Upper or Lower) focal plane. Credit: *Biophysics Reports* (2024). DOI: 10.52601/bpr.2023.230024

Migrasomes, novel organelles first reported by Professor Li Yu' s team in 2015, are vesicular structures with diameters ranging from 0.5 to 3 micrometers that form on the retraction fibers at the rear of migrating cells. These structures contain various biomolecules such as proteins, nucleic acids, and lipids, along with numerous small vesicles, each approximately 50 nanometers in diameter.

Migrasomes act as conduits for information and material exchange between cells and their microenvironments, participating in essential physiological and pathological processes such as embryonic development , angiogenesis, immune responses, and tumorigenesis.

In recent years, as the mechanisms and biological functions of migrasomes have been elucidated, a methodological framework for studying migrasomes has gradually emerged, laying the foundation for further research advancements.

Migrasomes possess a distinctive morphology and have a lifespan of several hours, making them well-suited for high-quality optical microscopy imaging. Therefore, optical imaging systems have become the most direct and reliable method for detecting and analyzing migrasomes.

Based on published studies and the authors' own research experiences, an article, titled "Seeing is believing: Observation of migrasomes," published in *Biophysics Reports* outlines a protocol for observing migrasomes using optical microscopy. It also summarizes the information on proteins, dyes, and antibodies that can be used to label migrasomes, and details the steps for constructing an in vitro migrasome reconstitution system.

These protocols provide a basic operational guide for high-quality migrasome observation. However, given the diversity of research

objectives and the complexity of migrasomes, the authors recommend that researchers may need to tailor the experimental procedures to their specific needs.

As our understanding of migrasomes deepens and technologies evolve, the methodologies for migrasome imaging are expected to be continuously updated, thereby facilitating further advances in migrasome biology.

More information: Yuwei Huang et al, Seeing is believing: observation of migrasomes, *Biophysics Reports* (2024). DOI: 10.52601/bpr.2023.230024

Provided by Frontiers Journals