

KEEPING A FINGER ON THE PULSE OF EXOSOME IP AND INNOVATION



Overview

As technological advancements improve methods for exosome isolation and characterization, research centered around their diverse roles in health and disease continues to grow. In an increasingly populated area of interest, reliable IP insights are critical for protecting investments and minimizing risk to the innovators working in this space.

Background: Exosomes, a specific population of extracellular vesicles released by all cells, are rapidly emerging as a promising tool in diagnostics, therapeutics, and beyond.^{1,2} A crowding of interest in their potential for impacting cancer, cardiovascular disease, and neurodegeneration calls for IP monitoring that can keep pace.

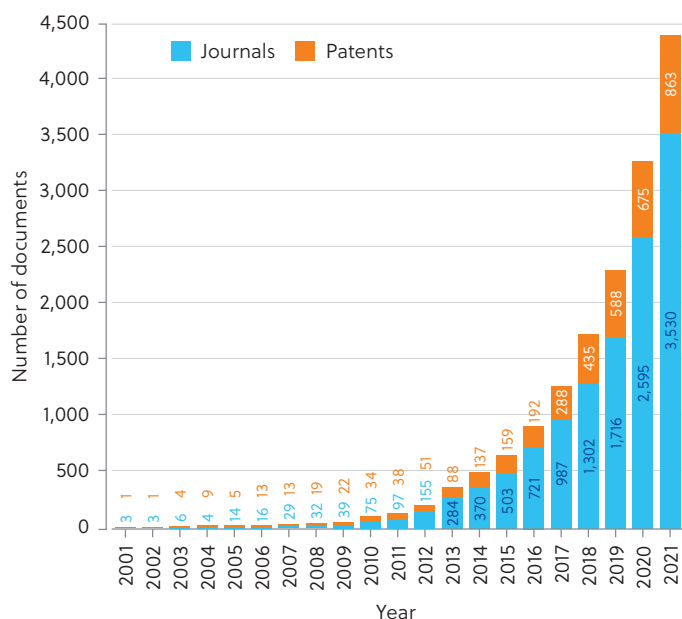
Market potential: The global market of exosome therapeutics and diagnostics is likely to reach \$1.4 billion by 2028.

Key benefits: Exosomes' natural ability to cross the blood-brain barrier and efficiently mediate cell-to-cell communication has led to them emerging as a less toxic and low immunogenic contender for lipid nanoparticles (LNPs).^{3,4} Interest in re-designing drug delivery and formulation, among other applications, offers extensive exosome IP opportunities.

Key challenges: In an area of intense competition and fast-paced innovation, conducting thorough patent searches presents a critical challenge. Harnessing data-rich search technology and liaising with IP experts to navigate patent intricacies is essential.

Opportunities: Significant progress in understanding exosome biology has fueled widespread interest in harnessing their capabilities, specifically in diagnostics and therapeutics. Together, a steady increase in funding and researcher curiosity has contributed to the recent surge in exosome translational research,⁵ making it a promising area of biotechnology research to invest resources.

Publication trends capture the breadth of opportunity for exosome-related R&D



With a wide portfolio of donor cell types and multiple functions across the spectrum of physiological and pathophysiological processes, exosomes are emerging as game changers in nanotechnology. Their roles across intracellular communications, governing the migration, proliferation, and senescence of cells, and as mediators of the immune response, uniquely position them as one solution fit for many applications — from food and cosmetics to drug delivery systems and biomarker-led diagnostics.

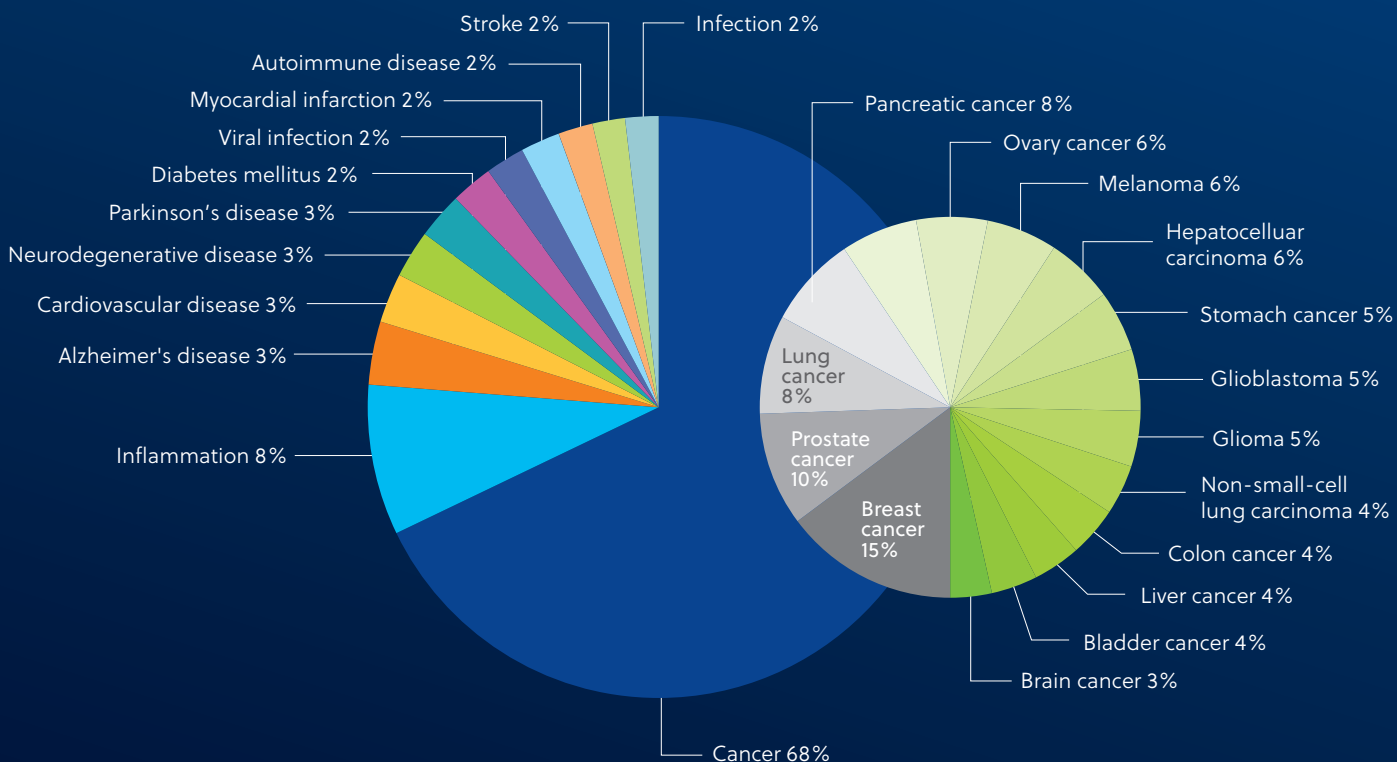
This is why, in recent years, we have seen exponential growth in exosome publications across these diverse applications.

Trends in the number of publications related to exosomes in drug delivery and diagnostics, including journal articles and patents.

Exosomes have the potential to become a staple across the clinical spectrum

Carrying cargo to and from cells highlights exosomes as powerful biological tools for developing treatments for the world's biggest health challenges.

The distribution of publications related to exosome applications in therapy and diagnostics alone illustrates the sizeable opportunities across cancer, neurodegenerative disease, inflammation, and other major disease categories.



Distribution of publications in the CAS Content Collection™ related to exosome applications in therapy and diagnostics with respect to the target diseases.

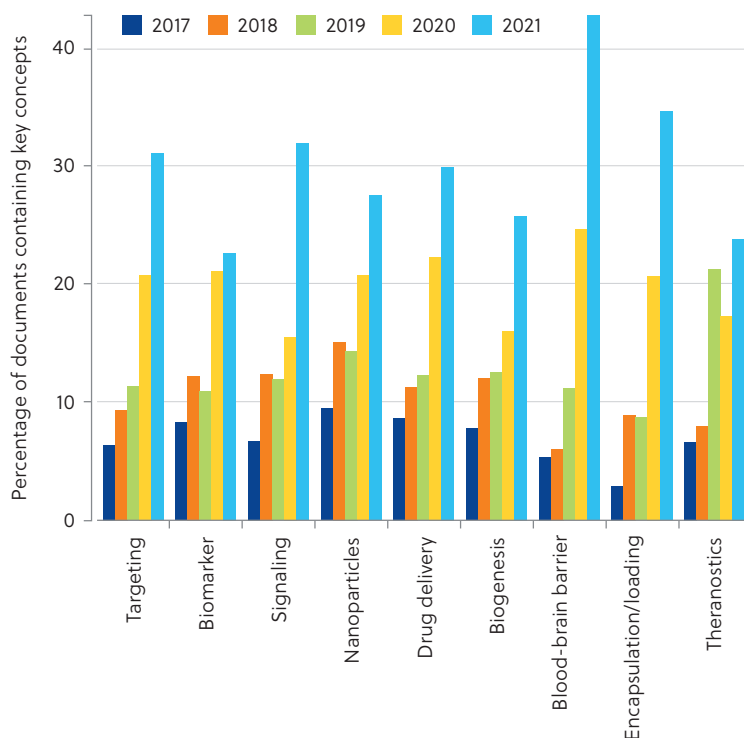


Rapid changes in the exosome landscape require IP insights that can keep up

More companies are using exosomes in therapy and diagnostics, taking advantage of the current unmet need to treat disease. If the recent dramatic increase continues, exosomes will soon become a cornerstone in therapeutic R&D, driving related therapeutics toward saturation. Reliable IP monitoring that can keep pace with rapid innovation is the best way to lead at the cutting edge and take advantage of gaps in the market.

Increased interest in exosomes in recent years across therapy and diagnostics applications

Under therapeutic and diagnostic exosome applications, a few recurring ideas are emerging. In particular, more publications contain key concepts like the blood-brain barrier, encapsulation, signaling, targeting, and drug delivery, demonstrating rising trends over recent years.



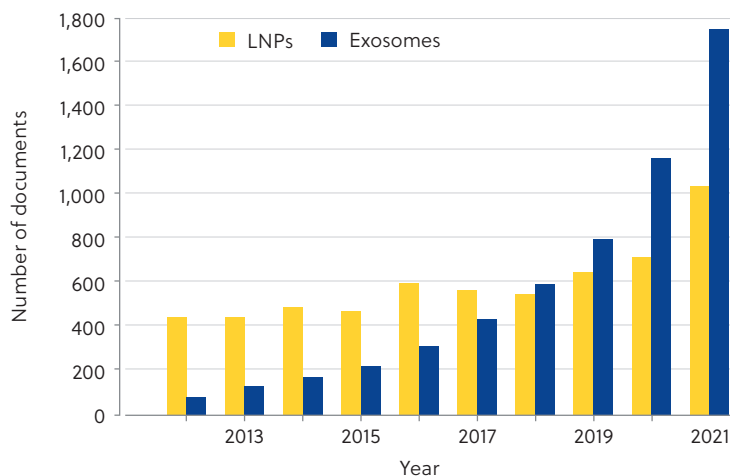
Exponential growth in journals and patents is supported by growing funds

The increased representation of exosome research in drug delivery and diagnostics is evidenced by the explosion of journal articles and patents in the last decade. Availability of resources is usually a limiting factor for novel research, but this rising interest in nature's nano-carriers correlates with annual NIH funding, increasing sharply after 2015. Without funding as a bottleneck, we expect to see this burst in exosome-related R&D to continue, creating new IP opportunities in biomedical and public health research applications.

Exosomes are overtaking LNPs as the go-to nanocarrier of choice

Alongside explorative research in biomarker discovery and other non-medical applications, a leading exosome application repurposes them as drug delivery vehicles. Owing to their natural properties that are benefits for drug carriage, like their ability to cross the blood-brain barrier, low immunogenicity, and reduced toxicity, exosomes are quickly overtaking traditional synthetic carriers such as lipid nanoparticles (LNPs) in recent drug delivery publications.

Exosome and LNP publication trend



Exosomes have the potential for real impact

Beyond the journal articles and patent publications, exosome-related therapeutics are already making it out of the lab and into clinical trials. This real-world data demonstrates the exciting, multifarious impact that exosomes can have, showing that it is real and versatile. They are making it out of the preclinical phase of clinical development across targets, from neurological and infectious diseases to CVD and cancer.



Maintaining a balance between innovation and resource allocation is easier with expert IP monitoring

The surge of interest in exosomes for therapeutics and diagnostics R&D continues to grow and highlights a need for meticulous due diligence in IP research. With competition and innovation in this field heightening, comprehensive IP monitoring becomes crucial to avoid potential patent conflicts and ensure the novelty of discoveries.

As more organizations explore exosome applications, conducting thorough searches to safeguard the rights to novel innovations will ultimately influence the success and sustainability of research and commercialization efforts in this space.

Navigating the complex patent landscapes with professionals mitigates risk and protects valuable intellectual property by investing resources in narrow gaps in an exploding market.

Learn more at cas.org/stnext

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