

Nano-C Customizes Functionalized Fullerenes for the Biopharmaceutical Industry

www.nano-c.com

Fullerenes are unique, customizable carbon molecules that can be used in a wide range of therapeutic applications. Their versatility stems from their fundamental molecular properties and by applying functional chemistry to C₆₀ fullerene's surface, the process of adding precise groupings of atoms that enable a specific function, it becomes a true molecular platform that potentially enables strong anti-viral and anti-inflammatory properties to effect a new class of biopharma therapeutics.

Nano-C and Unify Pharmaceuticals

Unify Pharmaceuticals, a Vanderbilt University spinout, was co-founded by Dr. Laura Dugan (Vanderbilt, Washington University, Stanford, MIT). As one of the leading neuroscientists, Dr. Dugan has studied the therapeutic properties of functionalized fullerenes for over 20 years and has published numerous scientific papers on the potential benefits of these unique active pharmaceutical ingredients (APIs) on neurodegenerative disease including Parkinson's and Alzheimer's.

Pre-clinical trials with Unify's patented functionalized fullerene UP-1007, showed marked efficacy on primates afflicted with Parkinson's Disease, with statistically significant differences appearing after just 30 days vs the control with no toxicity over the course of the trial.

Market Potential by Medical Condition¹

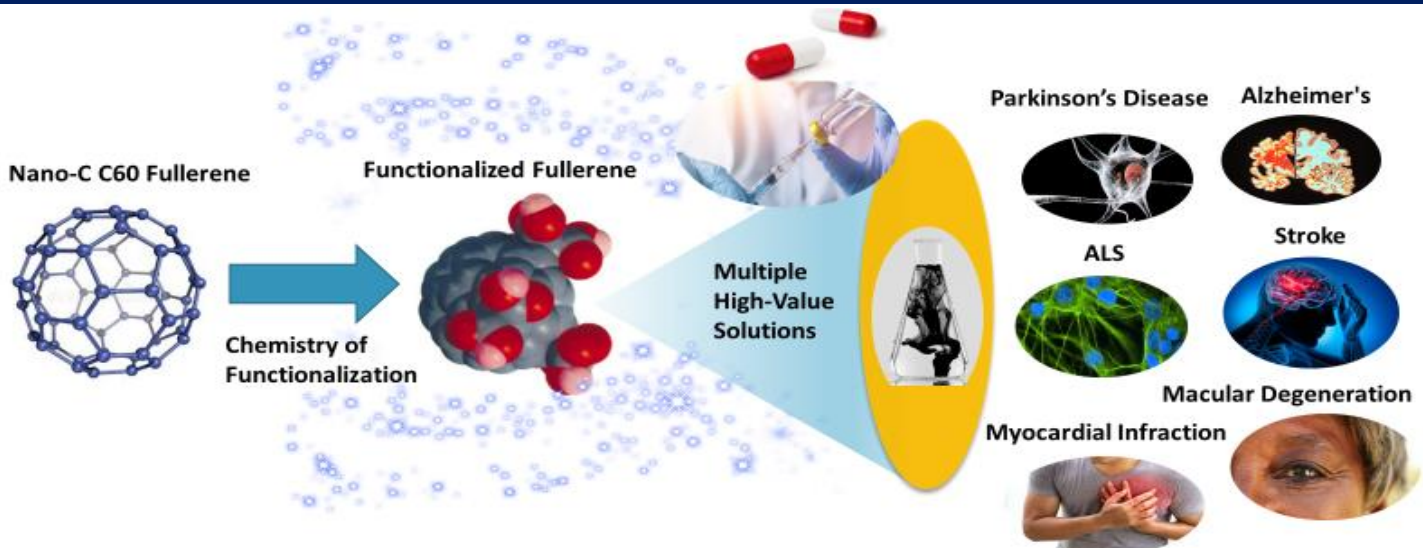
Medical Condition	Cases/Incident Rate Year 2020	Global Market (USD)
Parkinson's Disease	>10 million people globally	\$4 Billion USD in 2017 \$8 Billion USD by 2026; CAGR 8%
Alzheimer's	>30 million people globally	\$3 Billion USD in 2017 \$6 Billion by 2024: CAGR 8%
Macular Degeneration	196 million globally	\$6 Billion in 2018 \$12 Billion by 2026; CAGR 9%
Myocardial Infraction	720,000 new attacks; 335,000 recurrent attacks in the US	\$42 Billion in 2017 \$60 Billion by in 2022; CAGR 7%
Stroke	~1 in 6 people in their lifetime	\$24.2 Billion in 2017; \$35 Billion 2023; CAGR 7%

¹ Unify Pharmaceuticals, *The Lancet GLOBAL HEALTH* (June 2020)

Unify is set to begin Phase 1 clinical trials this year for fullerene-based drug therapies for neurodegenerative disease and fast-track clinical trials for an unrelated COVID-19 indication. <https://unifypharma.com/>

As one of the leading global suppliers of functionalized fullerenes, **Nano-C is Unify's chosen qualified source for the scale-up and supply of the GMP certified active ingredient UP-1007.**

Potential Treatment Platforms for Neurodegenerative and Cardiovascular Disease



Pete Conley
 Managing Director, Boustead Securities
pete@boustead1828.com | 310-383-7874

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Nano-C's Role in Pharmaceuticals

Experts in Fullerene Chemistry and Scale-Up

Nano-C is one of the world's leading producers of fullerenes and patented functionalized fullerenes. These proprietary materials are critical links in the value chain for Nano-C's core application areas and have interesting properties for potential use in a variety of drug therapies.

Unify chose Nano-C to be its supplier and scale-up partner due to Nano-C's singular expertise in fullerene chemistry and its team of expert organic chemists and process engineers.

Nano-C has been actively engaging with Unify for several years and is pleased to formalize the strategic partnership. As Unify's chemistry partner Nano-C will manage scale up and synthesis of UP-1007, Unify's active pharmaceutical ingredient (API), at an exacting cGMP standard.

What You Need To Know

- Unify is working with the FDA on a fast-track clinical trial for fullerene-based COVID-19 therapy
- Unify will likely begin clinical trials in 2020 for neurodegenerative disease with fullerene-based active ingredient UP-1007
- Nano-C is Unify's qualified source for the scale-up and supply of the UP-1007
- Unify and Nano-C signed a Letter of Intent naming Nano-C as Unify's strategic partner and exclusive supplier of UP-1007
- Nano-C and Unify are negotiating a term sheet to pursue a strategic alliance.
- First phase of tech transfer for scale-up of UP-1007 is complete
- UP-1007 is non-toxic based on toxicology data²

² National Center for Biotechnology Information (October 2018) <https://pubmed.ncbi.nlm.nih.gov/29520718/>

Nano-C Provides Value-added Solutions to the Pharmaceutical Industry



Nano-C plans to manufacture, functionalize and provide GMP-ready materials

Formulation and Drug Development

Beyond Unify – Additional Opportunities in Pharmaceuticals

Existing research indicates that fullerenes have appealing photo, electrochemical and physical properties, which can potentially be used in treatment platforms beyond neurodegenerative and cardiovascular disease. From cancers to disease like arthritis and asthma, fullerenes are potentially useful therapeutic agents. Fullerenes have also been shown to exhibit properties that potentially encourage drug delivery. Research has shown that functionalized fullerenes could possibly be exceptional candidates for a range of therapeutic platforms. Nano-C is pleased to play an enabling role.

Additional Potential Treatment Platforms and Pharmaceutical Applications

- Multiple Sclerosis (MS)
- Radioprotectants
- Photodynamic Therapy
- Cancer
- Arthritis
- Asthma
- Drug Delivery

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