

Voyageur Pharmaceuticals Ltd. Signs an MOU for the Development of Carbon Fullerene Contrast Agents for Medical Imaging Applications and Related Carbon Capture Technology

written by Raj Shah | October 25, 2022

October 24, 2022 ([Source](#)) – Voyageur Pharmaceuticals Ltd. (TSXV:VM) (OTC:VYYRF) (the “Company” or “Voyageur”) has signed a memorandum of understanding (MOU) with Rain Cage Carbon Inc. (RCC), to enter into a development agreement for fullerene-based contrast agents. RCC, a carbon capture company located in Calgary, Alberta, has proven technology that removes CO₂ and other pollutants from hydrocarbon exhaust streams. The CO₂ is converted into oxygen and carbon and creates fullerene allotropes and nanotubes that can be applied to a wide variety of products to enhance strength, durability and, in the case of contrast materials, ease of delivery. A fullerene is an allotrope of carbon with atoms connected by single and double bonds to form a closed (or partly closed) mesh that can potentially act as a versatile delivery system for a wide range of biomedical applications. According to the NIH National Library of Medicine (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2676811/>) carbon allotropes have multiple applications in the pharmaceutical industry for radiology contrast media, drug and gene delivery

systems, anti-viral and anti-bacterial medications, photosensitizers, and can also be used as antioxidants. The major hindrances to advancing new fullerene-based drugs are cost, quality, and quantities of supply.

Brent Willis, CEO, states "Voyageur has been on a multi-year quest to find a high quality, dependable supply of fullerenes for its radiology contrast media drug pipeline. We have reviewed several products and companies in that effort. Rain Cage Carbon is by far, the most advanced we have found. RCC has revolutionised the carbon capture market by creating high-volume low-cost fullerene allotropes, as a biproduct of their carbon dioxide (CO₂) capture process. We now have another potential mineral-based contrast, that we can develop to become fully integrated, from the exhaust stream of hydrocarbon engines, into the vial of an injectable drug. With the current shortages of radiology drugs, Voyageurs full integration strategy is poised to ensure supply chain security for the North American health care market".

Fullerenes are carbon nanotubes, single molecule C₂₀-C₁₂₀ with the most common molecules being C₆₀ and C₇₀. Endohedral metallofullerenes are unique molecular carriers whereby a single atom or ions are inserted inside a C₆₀ molecule trapping and creating a protective impenetrable cage around the medical cargo. Fullerenes are biocompatible and the nanostructures are capable of being loaded with materials of medical interest for diagnostic and therapeutic medicine.

The new innovative mineral based radiographic drugs that Voyageur & RCC will be focused on patenting include iodine, gadolinium, and iron oxide-based fullerene contrast agents. The I₂ molecules for X-ray computed tomography (CT) imaging and the Fe₂O₃ and Gd ions can be used for magnetic resonance imaging (MRI). Nuclear imaging will be explored as Voyageur and RCC

create the research and development pathway for these new and novel drugs.

The following is an example of a fullerene-based MRI contrast agent that delivered a gain of 500-fold sensitivity versus conventional contrast agents. (1. <https://pubmed.ncbi.nlm.nih.gov/12213469/> 2. <https://pubmed.ncbi.nlm.nih.gov/20567614/> 3. <https://pubmed.ncbi.nlm.nih.gov/33428854/> 4. <https://pubmed.ncbi.nlm.nih.gov/35665690/>)

Voyageur and RCC will work jointly to develop new commercial fullerene molecules for contrast media applications in medical imaging. Fullerene based contrast media drugs will potentially allow for much earlier detection of disease and potentially provide a safer mechanism of transport, for toxic metals to be deployed in the body, compared to current drugs that are in the market.

Net Zero Pharmaceutical Plant

Voyageur will deploy a RCC carbon capture unit at its new pharmaceutical manufacturing facility, scheduled for construction in 2023, to help enable Voyageur to achieve its goal to become a low carbon emitter and align with the 2030 U.N. Sustainable Development Goals and Canadian investor Environmental, Social & Governance goals (ESG). The unit will produce carbon for Voyageurs R & D program and potential new drug production. Voyageur has a vision to become 100% carbon neutral and utilising RCC carbon capture technologies will play a significant role in achieving the milestone of creating contrast materials that deliver a positive benefit for the environment and contribute to the fight against climate change.

About Voyageur

Voyageur is a Canadian public company listed on the TSXV under

the trading symbol VM. Voyageur is focused on the development of barium, iodine, and carbon Active Pharmaceutical Ingredients (“API”) and high-performance cost-effective imaging contrast agents for the medical radiology marketplace. Voyageur’s goal is to initially generate positive cash flow from operations using third party GMP pharmaceutical manufacturers in Canada. Ultimately, Voyageur has plans to build all the required infrastructure to become 100% self-sufficient with all manufacturing. Voyageur owns a 100% interest in three barium sulphate (barite) projects including the Frances Creek property, suitable in grade for the pharmaceutical barite marketplace, with additional interest in a high-grade iodine, lithium & bromine brine project located in Utah, USA. Voyageur is moving forward with its business plan of becoming the only fully integrated company in the radiology contrast media field, by controlling all primary input costs under the motto of: “From the Earth to the Bottle”.

About Rain Cage

Rain Cage is a private Canadian company that has developed a unique carbon capture process. It is focused on energy transformation allowing people, governments, financial institutions, and corporations to see and profitably surpass their environmental and social goals.

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