



Executive Summary – Nanochon™

www.nanochon.com

Ben Holmes, CEO

ben.holmes@nanochon.com

Nanochon™ is commercializing an implantable medical device for treating knee injuries in younger and more active patients. This means people that are under 55 typically, and need to return to work, sports and strenuous physical activity. Currently, orthopedic sports medicine surgeons treat these patients with a variety of surgical techniques, graft procedures, cadaveric tissue and some high-end cell-based therapies. All of these treatments have significant drawbacks, either with effectiveness, invasiveness or cost. When polled by Nanochon™, sports medicine surgeons said even though they had preferred treatments, **none considered there to be a “gold standard” for surface cartilage repair.**

Potential Benefits of Nanochon™



Microfracture generates a scar, lasts for 1 year



Grafts/solid implants have long and faulty recovery, last for 2 years



Nanochon™ supports weight AND grows new cartilage after just 4 months



The device is based on 3D printing and a novel, nano-structured, synthetic material. Together, proprietary 3D designs and the material enable Nanochon™ to create an implant which is effectively “artificial” cartilage. The device works by **replacing lost or damaged cartilage** immediately, while also causing **new healthy tissue** growth and healing long term. This provides two key benefits 1) patients are able to have shorter, less involved and more successful recovery and 2) have an effective treatment that lasts for years. The device has other unique characteristics too. Because of the durability of the material, and the literal flexibility provided



Nanochon LLC, 5804 Fitzhugh St Burke VA, 22015
Ben Holmes, CEO, ben.holmes@nanochon.com

by a 3D printed part (as opposed to traditional manufacturing) the device is highly malleable. This means that **a large, 1.5 cm to 2 cm implant can be rolled up and fit through an arthroscope**. And once inside the joint space, a surgeon can easily form the implant into place and securing it using existing biodegradable fixation tools. *Currently graft tissue and other treatments of this size cannot be implanted arthroscopically*, meaning patients have to undergo a more invasive procedure with a much longer recovery time.

Nanochon's device will provide an effective therapy for early and less invasive treatment of knee injuries. Based on the technology's performance and the needs of the sports medicine market, there are a number of key value propositions to our business. So far, surgeons interviewed or who have worked with the device experimentally found the product easier to use than existing products, which could lead to more treatments in a year. Because the device can be implanted arthroscopically, **procedure can be done in surgical center with same day recovery**. This means that treatment can 1) be a more attractive option for patients and 2) surgeons can do the procedure in their own outpatient facilities instead of hospitals. The material itself is relatively low cost and works with existing, scalable 3D printing technology, meaning that the **device unit cost is low and the margin high**, so the downstream procedure will cost less money. This also means that the Center for Medicare Services and insurance companies should issue a CPT code or allow us to leverage existing codes for grafts and implants. Finally, the recovery time for patients will be quicker than for graft and cadaver tissue treatments. This means that the surgeon can potentially treat more patients in a year and attract new patients to their practice.

Nanochon™ was founded in 2016 by Dr. Ben Holmes and Nathan Castro. Nanochon's founders were both working on novel strategies related to 3D printing for orthopedics. Together the founders envisioned a new type of implant that can replace lost cartilage short term and effectively fuse with the body long term, to improve patient outcomes across the board. To date Nanochon™ has raised \$314,000 in non-diluted funding, most recently with a Phase I SBIR from the National Science Foundation. **Results from a goat study have been promising**, with knee repair and new real, healthy cartilage growth being substantially greater with the Nanochon™ Implant. Nanochon™ is seeking \$1.5M in equity financing, at a \$5M valuation, to fund a first in human study in 2019.

Dr. Holmes acts as CEO, has brought another medical device through development and is helping close an exit for that company. He has also brought Nanochon™ all of its funding to date. **Dr. Castro**, CTO, is a highly decorated researcher who has participated in a clinical trial for a 3D printed device. Nanochon™ has a core team of key members who have aided in its growth since 2016. **Matthew Scherer** is an experienced public and private equity broker and CFO of a medical device company. **John Rodriguez** is a VP of product development and has been a past executive of a cartilage therapeutic. **Matthew Dowling** is the founder CSO of a medical technology company, which he spun out of University of Maryland, and took the company through several rounds of non-dilutive and venture financing. Finally, Chief Medical Officer **Dr. Chris Cannova** is a highly experienced orthopedic surgeon, knee specialist, adjunct at Johns Hopkins and medical device product developer for emerging companies and large strategics like Zimmer Biomet. Nanochon™ also welcomed in house general counsel **Matt Cunningham** to the team in 2018.

