



May 1, 2018

Company Report

Industry: Medical Technology

## PETVIVO HOLDINGS, INC.

### Key Milestones Ahead + Upgraded Leadership = Higher Stock Price

Analyst: Rob Goldman

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#### PETVIVO HOLDINGS, INC. (OTC – PETV - \$1.29)

Rating: Speculative Buy

Price Target: \$3.00

#### COMPANY SUMMARY

PetVivo is an emerging biomedical device company focused on the licensing and commercialization of innovative medical devices for pets and pet therapeutics. PetVivo is leveraging investments made in the human medical device industry to commercialize therapeutics for pets in a capital and time efficient way. A key component of this strategy is the accelerated timeline to revenues for veterinary medical devices, which enter the market much earlier than the more stringently regulated pharmaceuticals.

#### KEY STATISTICS

Price as of 4/30/18	\$1.29
52 Week High – Low	\$2.50 - \$0.05
Est. FD Shares Out.	24.0M
Market Capitalization	\$30.1M
Average Volume	3,101
Primary Exchange	OTCPK
Fiscal Year	March 31

#### CORPORATE INFORMATION

**PetVivo Holdings, Inc.**  
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#### INVESTMENT HIGHLIGHTS

**PetVivo Holdings is well-positioned to emerge as the standard of care for the treatment of osteoarthritis in dogs and horses, an estimated \$3.2 billion combined annual market.** The current available treatments target the ailment's symptoms rather than the cause. Thus, an unmet need exists for PetVivo's approach.

**Slated for full-scale commercialization in April, the PetVivo platform directly improves activity, reduces pain, and is characterized by a strong safety profile.** Given the efficacy of its treatment, affordable cost, and the emergence of new, profitable revenue streams for veterinarians PetVivo offers a compelling, therapy for beloved pets, vets, and owners alike.

**PetVivo has a deep IP portfolio and a new, enviable leadership team.** With \$15M invested in R&D including \$7M from NIH, PetVivo has a 17 product-deep human and pet therapy. This includes a dermal filler for wrinkles that targets the cosmetic market in which a successful Pivotal FDA Human Trial has already been completed.

**Sales are forecast to enjoy huge growth.** We project sales will leap from \$3M in FY19 to \$12M in FY20 and \$20.5M in FY21.

**PETV has been a great pick for us, rising from \$0.65 in our original 2016 report and in our view, PetVivo is worth \$3.00 today.** At 3x FY20E sales, PETV trades at a substantial discount to its peer group, which trades at a nearly 6x P/S multiple. Our \$3 target is based upon a 6x sales P/S multiple and affirmed by a Net Present Value (NPV) calculation. Thus, we rate PETV Speculative Buy.



## COMPANY OVERVIEW

### The Skinny

Minnesota-based **PetVivo Holdings, Inc. (OTC – PETV - Speculative Buy)** is a biomedical device company primed to emerge as the new standard of care for the treatment of osteoarthritis (OA) in canines with *Kush*<sup>™</sup>, its proprietary and proven therapy for canines and equines. OA is a condition with degenerating cartilage that creates joint stiffness from mechanical stress, resulting in pain and inflammation. With full-scale commercialization set to commence next month, PetVivo should begin to generate meaningful revenue in FY19 (begins April 2018) and beyond.

There is no cure for lameness caused by OA and current therapies treat the symptoms and not the cause. Moreover, they typically do not carry a favorable risk profile. Conversely, the PetVivo approach directly improves activity, reduces pain, and is characterized by a strong safety profile.

In a recent report, the American Pet Products Association (APPA) estimated that the 2017 pet therapeutics market for vet care alone was \$16.6 billion, driven by the love affair we have with our pets, especially dogs and cats. After all, we increasingly treat them as family members rather than just domesticated animals and we actively endeavor to keep them healthy and extend their lives as much as we can.

Given the efficacy of its treatment, affordable cost, and the emergence of new, profitable revenue streams for veterinarians, PetVivo estimates that the size of the canine OA treatment markets in the U.S. and EU alone are \$2.6 billion annually. Thus, PetVivo both fulfills a significant unmet need and ensures its own success by aiding the veterinary channel actively seeking additional revenue streams.

### The Backstory

PetVivo's strategy is to commercialize proprietary products from human medical device companies specifically for the companion animal market. To that end, after spending \$15M over fourteen years of R&D and product launch preparation the company's product pipeline the Company's flagship launch is set. Moreover, the Company has seventeen animal and human therapeutics in varying stages of development.

The Company's core technology traces its roots to the acquisition of Gel-Del Technologies, Inc. The technology was originally developed by the Company's board member Dr. David Masters at the Mayo Clinic and then licensed on a royalty free technology transfer. The core technology produces thermoplastic protein-based



biomaterials that mimic the body's tissue to allow integration, tissue repair and regeneration for long-term implantation.

Today, PetVivo boasts a strong and deep IP portfolio with 20 patents protects the Company's products, production processes and biomaterials. In fact, PetVivo was just awarded 2 patents in March 2018 directed to the Company's signature products: protein-based biomaterials used for various beneficial medical applications, including drug delivery devices, coated medical devices (e.g., stents and valves), and tubular/vascular grafts. While its flagship product, *Kush™ Canine* is a joint injection, it is actually categorized as a medical device with a demonstrated history of human safety and efficacy as well as efficacy and safety in canines. Going forward, the Company will also be seeking licensing partners to commercialize its portfolio of proprietary human clinical therapeutics in large market sectors, including: cardiovascular, orthopedic, urology and aesthetics.

#### Prepping for the Opportunity

In many ways, PetVivo is a transformed entity compared with just 6-9 months ago and the current stock price reflects some of these changes. The Company has added tremendous muscle and experience in key C-level and board level areas, including CEO, revenue, sales, manufacturing, operations, etc. The new team has re-configured processes, procedures, manufacturing and the operating model, thus positioning PetVivo as an emerging leader in this space. Moreover, these changes set the stage for future stock price increases in our view, as the "success bar" has been raised.

With a \$500,000 funding complete, along with the move to a new facility for low-cost and high-quality production, the treatment will be ready for full-scale commercialization in a matter of weeks, much to the delight of numerous animal hospitals and medical offices which have been waiting to utilize the treatment for its patients.

It should be noted that following the broad market introduction the Company's canine OA treatment, PetVivo plans to introduce a similar product to treat OA in horses, which represents a \$600 million annual market. With over \$15 million invested in R&D including \$7 million from the National Institutes of Health (NIH), PetVivo boasts a deep human product pipeline to match its pet/veterinary efforts. The Company's lead human product is a dermal filler for wrinkles that targets the cosmetic market. A successful Pivotal FDA Human Trial has been completed but an FDA Premarket Approval (PMA) submission will be deferred until FY20, following the *Kush™* commercialization launch.



With a number of competitive advantages in the space, a deep product pipeline and IP portfolio, combined with a clever financial model, we believe that the Company can enjoy hockey-stick type sales growth in the next 2-3 years. In the short term, investors can expect PetVivo to complete an additional financing in the next 12 months or so to fully fund R&D and sales efforts. This event would likely coincide with a stock up-listing to NASDAQ or the NYSE. As meaningful revenue occurs in multiple product categories, we expect PETV to emerge as a takeover candidate.

At current levels, PetVivo trades at a substantial discount to its peer group on a price/sales basis. The stock trades roughly 3x FY20E projected sales, as compared with a P/S metric of nearly 6x for the peer group. Our \$3.00 price target is based upon a 6x sales multiple on FY20E revenue of \$12M and affirmed by a Net Present Value (NPV) calculation derived from our projected FY20 revenue of \$20.5M, utilizing a 15% discount rate. Plus, since this valuation is based upon the canine veterinary products only, investors are essentially getting future animal and human products for free. Thus, we rate these shares Speculative Buy.

## INDUSTRY OVERVIEW

According to the American Pet Products Association (APPA), U.S. pet owners spent around \$69 billion on their pets in 2017, up from \$36 billion just ten years ago. The APPA projects over \$16 billion, or 25% of all expenditures, will be spent on veterinary care, which happens to be one of the segment's primary growth drivers. Clearly, our love affair with Fido has taken on a life of its own, as we are willing to spend more and more on our pets to extend their lives and quality of life.

At present more than two-thirds of all U.S. households have at least one pet, and 3 out of 5 millennials own pets as well. Millennials now represent the nation's primary pet owner demographic and have integrated them into the family unit at a degree even greater than predecessor generations, driving dollars to the pet care industry

Today there are an estimated 86 million cats, 78 million dogs and more than 8 million horses owned by U.S. households. In our view, the Company is the only firm in the space that will offer a direct OA treatment that truly alleviates the bone on bone inflammation and pain associated with OA in canines and equines. Existing therapies treat the symptoms and not the root cause. Thus, the Company's core technology addresses a critical unmet medical need.

### OA and the OA Treatment Market

It is estimated that 20 million dogs in the U.S. and EU are diagnosed with osteoarthritis each year, along with 1 million horses diagnosed with "lameness."



According to PetMeds.com, osteoarthritis, also known as degenerative joint disease (DJD), is defined as the progressive and permanent long-term deterioration of the cartilage surrounding the joints. Arthritis is the medical term for inflammation of the joints, while osteoarthritis is the term referring to a form of chronic joint inflammation caused by deterioration of joint cartilage. Older dogs are at the highest risk.

[http://www.petmd.com/dog/conditions/musculoskeletal/c\\_multi\\_arthritis\\_osteoarthritis?page=show](http://www.petmd.com/dog/conditions/musculoskeletal/c_multi_arthritis_osteoarthritis?page=show)

A physical examination will usually demonstrate degenerating cartilage creating joint stiffness from mechanical stress resulting in inflammation and pain. Affected dogs may also show signs of irritability and reclusiveness which may accelerate a pet owner's desire for swift treatment. Unfortunately, the current treatments offered for OA largely included only palliative pain therapy or joint replacement, which only treat OA's symptoms. Furthermore, as illustrated in Table I below, they also carry their own sets of issues. Conversely, PetVivo's flagship product offers significant competitive advantages over these therapies.

Treatment	Kush	NSAID	Galliprant	Joint Injection	Joint Replacement
Pros	Joint Protection; Activity Increase; Pain Reduction; Safety Profile	Temporary Relief; Delivery Form	Temporary Relief	Temporary Relief; Safety Profile	Joint Replacement
Cons	New Treatment	Treats Symptoms, Gastric/Kidney Risks	Treats Pain Only	Declining Efficacy; Vet-Only Treatment	Invasive Procedure; Cost
Treatment Frequency	Annual Injection	1x-2x Daily	Once Daily	Monthly Injection	Surgery & Rehab
Estimated Cost	\$600 - \$800/joint	\$0.90 - \$2.40	TBD	\$150 - \$250/joint	\$2000 - \$4000/joint
Est. Annual Cost	Same as Above	\$400 - \$700	TBD	\$1800 - \$3000	Same as Above
Sources: Company websites, Marble Arch Research					



NSAIDs (Nonsteroidal anti-inflammatory drugs), are currently the most common treatment for OA in canines as they are relatively inexpensive and can be administered by pet owners. However, these drugs do not carry the most favorable safety profile. After prolonged use NSAIDs have been found to cause gastrointestinal issues and could raise renal risk as well in canines (as well as humans.) Most important, NSAIDS do not treat the cartilage degeneration issue to halt or slow the progression of the osteoarthritis condition. Other treatments include joint injection and joint replacement. Both can be very costly and are vet-only treatments and procedures with that demonstrate varying degrees of efficacy.

It should be noted that one of the Company's most direct competitors in this category is be **Aratana Therapeutics (NASDAQ – PETX - NR)** which in 2016 was awarded FDA approval for its new treatment for canine OA pain and inflammation only, called *Galliprant*. According to their website, *Galliprant* is a novel, first in-class type of NSAID that has a unique mechanism of action and appears to still have mild gastrointestinal side effects but have a better safety profile and perhaps greater (albeit temporary) efficacy than other available NSAIDs on the market today. *Galliprant* is a once daily anti-inflammatory sold directly by veterinarians.

Judging by the huge market cap (\$179M) afforded this competing company despite no sales to date, Aratana and Wall Street see huge opportunities in this \$2.6 billion therapeutic opportunity in the U.S. and EU. Aratana estimates that the number of pets diagnosed with arthritis has significantly increased over the past five years, including:

- 13% of all geriatric dogs (22% of geriatric large and giant breed dogs)
- As many as 20% dogs with arthritis remain undiagnosed

The market for equines, while much smaller, offers an extremely attractive opportunity. After all, there is no current reparative treatment for equine joint lameness. Moreover, OA lameness worsens with time from ongoing loss of protective cushion and lubricity (i.e., loss of slippery padding). The estimated annual market for the 1 million potential horses diagnosed with lameness is \$600 million.

#### PetVivo Solves the Vet's Dilemma

The veterinary business is ever-evolving, and many veterinarians are struggling in consequence. Historically, drug sales represent up to 30% of total revenues at a typical veterinary practice. Revenues and margins at veterinary practices are being eroded because online, big box and traditional pharmacies recently started filling veterinary prescriptions. Plus, OTC products carry lower margins and availability is now ubiquitous. As a result, beyond traditional examinations, vaccinations, and



surgery, vets are actively seeking new revenue streams, along with a differentiating, profitable service to offer its patients.

## THE PETVIVO APPROACH

PetVivo Holdings, Inc. is an emerging biomedical device company focused on the licensing and commercialization of innovative medical devices for pets, or pet therapeutics. PetVivo believes that it can leverage the investments in the human biomaterials and medical device industries to commercialize therapeutics to pets in a capital and time efficient way. PetVivo's strategy is to in-license proprietary products from human medical device companies specifically for use in pets.

A key component of this strategy is the accelerated timeline to revenues for veterinary medical devices, which enter the market much earlier than the more stringently regulated pharmaceuticals. PetVivo has secured exclusive rights to its first product, an osteoarthritis medical device, which has been shown to be both safe and efficacious. PetVivo believes the administration of its initial therapeutic devices exceeds the benefits of those found in current remedies. Therefore, the pending commercialization of PetVivo's initial therapeutic devices will provide veterinarians and pet owners safe, effective, and long-lasting treatments to improve the pet's quality of life.

### Leadership Gets Major Upgrade

In the past 6-9 months, PetVivo has significantly upgraded its leadership team at the C-level and board level. The first step began with new CEO Wesley Hayne joining PetVivo nine months ago and continued with the addition of a Chief Revenue Officer (CRO) and independent directors with medical device, sales, finance, legal and operations experience. As the new team has been assembled, major progress with respect to product development (such as manufacturing) and the creation of a strong medical service-specific sales/marketing program under its new CRO David Merrill. These steps affirm the Street's confidence in management's model, as evidenced by rises in the stock price in recent months and should take the stock to the next level once commercialization occurs.

### Kush: A Disruptive and Effective OA Therapy

The Company's lead animal product is VD-01 "*Kush™ Canine*" for osteoarthritis indication in canines. The Company is planning to aggressively launch *Kush™ Canine* in fiscal 1Q19 (April 2018). *Kush™ Canine* is a veterinarian-administered joint injection for the treatment of osteoarthritis in dogs. The device is made from natural components that are lubricious and cushioning to perform like cartilage for



# MARBLE ARCH RESEARCH, INC.

the treatment of pain and inflammation associated with osteoarthritis. Management believes that *Kush™ Canine* is a superior treatment that safely improves joint function.

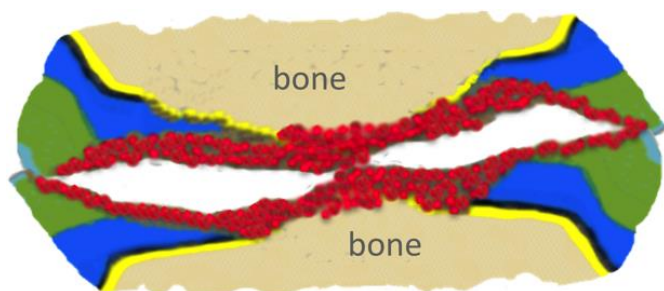


*Figure 1: Sample Kush Injection*

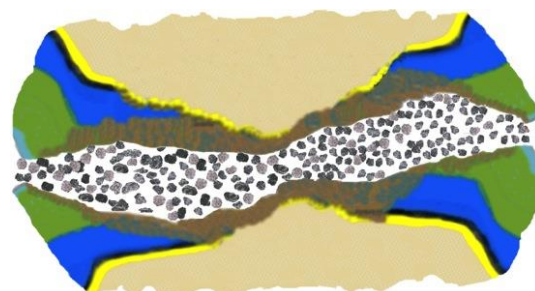
The reparative *Kush™ Canine* particles are lubricious, cushioning and long lasting. The spongy protein-based particles mimic the composition and protective function of cartilage (i.e., providing both a slippery cushion and healing scaffolding). Thus, the *Kush™ Canine* particles protect the joint as an artificial cartilage.

The elegance and simplicity of the PetVivo approach is that the particles are injected into the synovial cavity or space, which is the space between bones that has synovial fluid. The injection is a standard intra-articular technique requiring no special training but must be performed in a vet's office. If

needed, multiple joints can be treated simultaneously. Not only is there virtually no recovery period, but case studies demonstrate that *Kush™ Canine* increases walking/running/activity and eliminates the need for pain medications such as NSAIDs.



*Figure 2: Inflamed Joint*



*Figure 3: Kush™ Treated Joint*

## The Genesis

The Company's core technology traces its roots to the acquisition of Gel-Del Technologies, Inc. for 4.15 million shares of PetVivo. The technology was originally developed by the Company's President Dr. David Masters at the Mayo Clinic and then licensed on a royalty free technology transfer. The core technology produces thermoplastic protein-based biomaterials that mimic the body's tissue to allow integration, tissue repair and regeneration for long-term implantation.





Dr. Masters developed Gel-Del's proprietary biomaterials that simulate a body's cellular tissue and thus can be readily and effectively utilized to manufacture implantable therapeutic medical devices. The chief advantage of Gel-Del biomaterials is their enhanced biocompatibility with living tissues throughout the body.

Notably, Gel-Del Technologies successfully completed a pivotal clinical trial using this novel thermoplastic biomaterial as a dermal filler for human cosmetic applications. Gel-Del Technologies' core competencies are developing and manufacturing medical devices containing its proprietary thermoplastic protein-based biomaterials that mimic the body's tissue to allow integration, tissue repair, and regeneration for long-term implantation. These biomaterials are produced using a patented and scalable self-assembly production process. The inherent thermoplastic properties of these biomaterials are then utilized to manufacture or coat implantable devices.

It should be noted that no FDA PMA or 510(k) approval is required for medical devices to be used in veterinary medicine. The FDA defines a medical device as an apparatus or other item that does not achieve its intended purpose through chemical reaction in the body and is not dependent on being metabolized in the body. The PetVivo flagship platform (and the particles) is both classified as a medical device by the FDA since there are no chemical reactions with Kush™ particles and they are not metabolized in the body.

The platform boasts ten years of safety and efficacy in many species and there are strong precedents of comparable medical devices marketed under this above exemption in the veterinary market.

### Looking Ahead

Unlike other companies of PetVivo's size and standing, the Company has a FDA validated manufacturing process for human clinical trial production with single line, scalable, consistent lot-to-lot production with a method that eliminates cleaning steps, reduces infrastructure and increases capacity. Moreover, this approach is all about a low capex infrastructure and has signed a key manufacturing agreement with Elite Custom Solutions to produce the product for the Company.

One major sleeper characteristic of the product is the fact that it is room temperature stable beyond 24 months, which is a major advantage and plus for distributors and veterinarians alike.

It should be noted that most veterinarians in the U.S. buy a majority of their equipment and supplies from one of six veterinary products distributors. In fact, three



distributors (MWI, Patterson Veterinary, Butler Schein) deliver 75% of the products sold to companion animal veterinarians in the U.S. The product distribution will leverage the existing supply chain and veterinary clinic and clinician relationships already established by these large distributors. This distribution channel will be supported with regional sales representatives who in turn will support distributors and the veterinary clinics and hospitals. PetVivo will also target pet owners with product education and treatment awareness campaigns utilizing a variety of social media tools. The unique nature and the anticipated benefits provided by the products are expected to generate significant consumer response.

Importantly, in-clinic, new, effective treatments can quickly grow veterinary practice revenues and accelerate product adoption. Kush can offer significantly higher margin opportunity at the same price point as existing OA medicines while providing better outcomes with less side effects for animals.

The PetVivo product launch schedule includes first major shipments in fiscal 1Q19 (April 2018). *Kush™ Equine* device for the treatment of equine lameness related to or impacting synovial joints is currently scheduled for launch in 2019. The *Kush™ Equine* product has similar features and benefits as to *Kush™ Canine* device. In addition to serving as a treatment for osteoarthritis, the joint cushioning and lubricity effects of our devices have shown an ability to treat equine lameness that is due to navicular disease (a problem associated with misalignment of joints and bones in the hoof and digits).

Our current forecast assumes \$3M in FY19 sales with an operating loss of (\$1.3M), given the timing of commercialization. However, we believe revenue will jump markedly higher in FY20, with sales projected to reach \$12M with EBITDA of \$2.9M. At this time, while we expect the equine product to commence sales in FY19, and R&D progress on the human device front, we have modeled only canine sales in our preliminary forecast of \$20.5M in sales and \$7.8M in EBITDA.

The Company's current pipeline includes 17 therapeutic devices for both veterinary and human clinical applications in various stages of development from safety tests to FDA submission. This includes HD-05, the dermal filler for wrinkles highlighted in tests above. A successful Pivotal FDA Human Trial has been completed but an FDA Premarket Approval (PMA) submission will be deferred until FY19, following the *Kush™* commercialization launch. To fully fund the Company's R&D and sales efforts, we anticipate a financing round in the next 12 months or so, coinciding with an up-listing of PetVivo's stock to NASDAQ or the NYSE.

In addition to commercializing its own products in strategic market sectors and in view of the Company's vast proprietary product pipeline, the Company anticipates establishing strategic out-licensing partnerships to provide secondary revenues. As



material revenue in multiple product categories occurs, we believe that PetVivo could emerge as a takeover candidate.

## THE PETVIVO LEADERSHIP TEAM

### **Wesley C. Hayne, Chief Executive Officer, and Director**

Mr. Hayne has over 40 years of corporate executive experience having started several successful companies. He is known as a serial entrepreneur having created companies in the Biotech, Financial, Hospitality and Entertainment sectors. He founded and served as CEO of Hayne, Miller, Swearingen & Glore, Inc., during which time the firm acted as principal underwriter, responsible for 19 companies going public on NASDAQ.

### **John Lai, Co-founder, President & Chairman and CFO**

Mr. Lai has over 30 years of senior operations and financial experience and has served as CEO at Rovvr, Inc. & Genesis Capital Group, Inc., President at Viper Powersports, Inc. and CFO at Buyitnow.com. Mr. Lai has extensive experience in capital structure, financial analysis, business formation, mergers, acquisitions and driving production revenue growth.

### **David Merrill, Director of SW Region**

David E Merrill is an accomplished Senior Executive in the Medical Device Industry. Merrill is currently CEO and Managing Member of Merrill Family Enterprises, LLC. Mr. Merrill's experience includes serving as Vice President international, I-Flow Corporation (a Kimberly Clark acquisition), 30 years of experience at Medtronic including as Vice President, CRM, Asia-Pacific, and as a Director for St. Jude Medical. His financial responsibilities have approached \$300 million, annually. Merrill has focused on International business development since 1990. His service has included living in Hong Kong and Tokyo, negotiating government contracts and tenders and serving on the Asia-Pacific Executive Committee at Medtronic and the Executive Committee at I-Flow Corporation. He has traveled to and done business in fifty-three International geographies.

### **David Deming, Independent Director**

Mr. Deming has thirty years of commitment in the institutional Asset Management Industry focusing on business development, client service, compliance and operations management in institutional firm formations and establishing operations, compliance, business development, and client service. He has also established and launched a mutual fund, commingled funds and LP's. Mr. Deming is currently a



Partner at Asymmetric Capital Management, LLC and also serves as the acting CEO, Treasurer and a Director at Wildfire 5G, Inc.

**David B. Masters, Ph.D., Director and the Founder of Gel-Del Technologies, Inc.**

Dr. Masters is an entrepreneur, biochemist, biomaterials expert and inventor with credentials from Rutgers, Harvard, University of Minnesota and the Mayo Clinic. Dr. Masters has over 30 years of experience, including over 50 publications. A successful FDA clinical trial, 36 issued or pending patents and more than \$7 million in NIH grant awards.

**Peter Vezmar, Independent Director**

Mr. Vezmar has over thirty-five years of diverse experience in business management and strategy, corporate finance, IPO's mergers and acquisitions, financial reporting, regulatory compliance, tax matters and corporate governance. He has a wide range of experience and understanding in many industries, including options/futures, life sciences/biotech, IT technologies, insurance, transportation/logistics and advertising, among others. Currently, Mr. Vezmar is President and CEO of Marula Enterprises, Inc. a holding company founded to pursue investment opportunities primarily focused on targeted middle-market companies.

**Randall A. Meyer, Director**

Mr. Meyer has over 25 years of leadership experience in medical device development and commercialization including expertise in successfully growing medical device companies from concept to profitability. He has served as CEO at Tactile Medical (TCMD) and as COO at Gel-Del Technologies and Softscope Medical.

**John F. Dolan, Co-founder, Director**

Mr. Dolan has over 25 years of experience as a legal professional, patent attorney, corporate council and senior executive as an expert in the utilization of IP to capitalize and commercialize entities. He has served as a USPTO patent examiner in the organic chemistry and biotechnology area and as a partner at Fredrikson & Byron P.A.



### **Board of Advisors**

#### **Michael Haider, Advisor**

Mr. Haider has over 40 years of medical business, finance and management experience, most recently as Co-Founder and CEO of CytoMedical Design Group LLC, a company focused on blood-based stem cell research. Haider was President and CEO of BioE LLC, BioE, Inc. and he was President and owner of Kodiak Restoration, a dental and medical equipment service company; president and co-founder of PulseTrend, Inc., a maker of ambulatory blood pressure devices; and vice president and CFO of PPT Vision, a producer of machine vision technologies. Prior to these endeavors, Haider held a variety of positions in corporate finance at Medtronic, Inc., a leading provider of medical devices. Recent Honors: He was named one of Twin Cities-based Finance and Commerce's "Innovators of The Year" in 2003. In 2006 Minnesota Tekne Award, Emerging Biotechnology Company category and Twin Cities Business, 2007 Biosciences Success Stories. 2009 to current a member of the National Marrow Foundation ("Be the Match") New Technology Council since 2007 to current an annual presenter of stem cell business strategies to the University of Minnesota School of Pharmacy.

#### **Robin Young, Advisor**

Mr. Young is the Chief Executive Officer of PearlDiver Technologies and Publisher of "Orthopedics This Week". PearlDiver Technologies provides and consults on Medical Data Analytics which he has been CEO of for over eleven years. He is the Founder of "Orthopedics This Week" which is a publication that goes out weekly to over 100,000 Orthopedic doctors in the United States.

Mr. Young has been involved with various companies and having Founded the "New York Stem Cell Summit, NYC" with stem cell research and development. His has been a guest speaker at Foundation for Orthopedic Research, International Society for Advancement Spine Surgery, Laser Spine Institute, Johnson & Johnson Global R&D Congress, The Vatican, Cedars Sinai surgeon Conference, Etc. His subject topics have included Spine Surgery, Future of Orthopedics, Stem Cells and Regenerative Medicine, and Allograft Surgical Product to name a few.

Historically he has had Executive positions as Partner and Director of Research for Healthpoint Capital, Sr. Vice President of Life Sciences for Stephens, Inc. and VP of Equity Research at Piper, Jaffray & Hopwood, Inc. He has a wealth of knowledge that PetVivo hopes will be a great contribution to its research in the human arena.



### **Thomas Yezzi, Advisor**

Thomas Yezzi, has over 20 years' experience in the food ingredient and biotech industry, and has developed a broad network of venture partners, investors, and research scientists. His entrepreneurial focus has been on start-up and early stage companies. He is currently the President and Founder of NuTek Products, a business incubator for wellness foods and life sciences ventures. He also serves as the President of two portfolio companies, Nu-Tek BioSciences and Nu-Tek Fibers. Mr. Yezzi was a co-founder of Nu-Tek Salt. He served as President through the start-up and commercialization phases of the Company. His efforts contributed to sizeable funding from large VC's such as Khosla Ventures.

Mr. Yezzi has also held senior management positions in Operations, Business Development, and Process Development. He was the Vice President of Operations at Protient, Inc., a value-added food ingredient company focusing on the fractionation and purification of milk, whey, and soy proteins. He helped build Protient into a successful food ingredient business using venture capital seed/start-up money. The company was sold in 2005 to one of Europe's largest food companies. From 1993 to 2000, Mr. Yezzi was Director of Process and Product Development at Northern Food & Dairy, Inc., A SunOpta Company. He managed and generated new business in the nutraceutical, soy, and dairy industries. Tom successfully led many projects from the lab into commercial production. The company focused on custom/toll processing for large food companies such as Novartis, Dupont, Quaker Oats, Taiyo, White Wave, and Westbrae. Mr. Yezzi holds Bachelor and Master degrees in Food Science from the University of Minnesota. His focus and research were in the areas of food and industrial microbiology.

### **John Wagoner, Advisor**

John Wagoner, is a co-founder of Boomerang Vet a databased client communications service for Veterinary Hospitals located in Columbus, Ohio. In 2003, John founded, managed and grew CSC South Veterinary Supplies into the second largest veterinary distribution company in the Southeast region. In 2008, he sold CSC South Veterinary Supplies to Patterson Companies, Inc. He has an extensive veterinary distribution management expertise.

### **Brad J. Gordon, DVM, MS, Advisor**

Dr. Gordon's love for horses started as a child, when in the 8th grade Brad joined the USPC and applied himself in educational and competitive equine programs they offered, such as: eventing, dressage, mounted games, horse management, Quiz (formerly known as Knowdown), polocrosse, show jumping, tetrathlon polo, and fox hunting. He continues to make several yearly contributions and be involved with the



USPC Board of Governors. He is a recognized National Judge and the Chief of Horse Management Team. In 2004 Brad was recognized as USPC 'Legend' status and received the organizations "Founder Award". The last 14 years Brad has hosted the USPC "Anatomy Lab", where he voluntarily continues to educate members at the National Rally.

### **Brian T. Barnett, DVM, MBA, Advisor**

Dr. Barnett has been the owner and chief of staff at Randolph Animal Hospital in Asheboro, NC since May of 2002. Dr. Barnett earned his Bachelor of Science in Zoology from Auburn University and then his Doctorate in Veterinary Medicine from Auburn University's College of Veterinary Medicine. In addition to his science and veterinary degrees, Dr. Barnett holds an MBA from Wake Forest's Babcock School of Management. Dr. Barnett says that he has always wanted to be a veterinarian, which he adds is in large part due to the influence of his grandfather's love for all of nature's creatures. Being a veterinarian also provides him with the privilege of serving others and feeling like his work makes a difference to the lives of his patients and human counterparts. He also loves interacting with the various animals, educating pet owners, and the great variety of the work he does-no day is the same. This variation can be seen in his areas of expertise, which are dermatology, cosmetic and reconstructive surgery, and practice management (ergo the MBA).

## **FINANCIALS**

Our current forecast assumes \$3M in FY19 sales with an operating loss of (\$1.3M), given the timing of commercialization. However, we believe revenue will jump markedly higher in FY20, with sales projected to reach \$12M with EBITDA of \$2.9M. At this time, while we expect the equine product to commence sales in FY19, and R&D progress on the human device front, we have modeled only canine sales in our preliminary forecast of \$20.5M in sales and \$7.8M in EBITDA. We note that our forecasts assume essentially veterinary product sales only, to remain conservative. Investors can expect above industry-average operating margins of 20-30% beginning sometime in 2020 as PetVivo enjoys a critical mass of sales.



<b>PetVivo Holdings, Inc.</b>				
Historical & Projected Income Statement				
(\$, thousands)				
	<u>FY18E</u>	<u>FY19E</u>	<u>FY20E</u>	<u>FY21P</u>
<b>TOTAL REVENUE</b>	<b>\$0</b>	<b>\$3,000</b>	<b>\$12,000</b>	<b>\$20,500</b>
<b>Cost of Sales</b>	\$0	\$750	\$3,000	\$5,125
<b>Gross Profit</b>	\$0	\$2,250	\$9,000	\$15,375
<i>Gross Margin</i>	N/A	75%	75%	75%
<b>Operating Expenses</b>				
Research & Development	\$125	\$450	\$1,200	\$1,640
Sales & Marketing	\$600	\$1,200	\$2,520	\$3,075
General & Administrative	\$1,400	\$1,860	\$2,400	\$2,870
<b>TOTAL OPERATING EXPENSES</b>	<b>\$2,125</b>	<b>\$3,510</b>	<b>\$6,120</b>	<b>\$7,585</b>
<i>Opex as a Perc of Rev</i>	N/A	117%	51%	37%
<b>EBITDA</b>	<b>(\$2,125)</b>	<b>(\$1,260)</b>	<b>\$2,880</b>	<b>\$7,790</b>
<i>EBITDA Margin</i>	N/A	-42%	24%	38%
NOTES:				
"P" represents preliminary.				
Source: Marble Arch Research estimates				

## RISK FACTORS

Although PetVivo is on the cusp of full-scale product commercialization, a number of hurdles exists, including business development, financial, and production. For example, while its capex requirements are relatively low, delays could occur, which would affect the timeline outlined above. Other risks include a slow sales build of key products or competition from current or new entrants into the field. Given the Company's current standing, battle-tested approach, major competitive advantages, and enviable leadership team, we do not believe that funding timing or sales growth are meaningful risks. Separately, any potential dilutive effect from a future equity funding would be nullified by a related increase in overall market value. In any event, these risk factors are commensurate with companies of PetVivo's size and standing.





Volatility and liquidity are typical concerns for newly listed microcap stocks that trade on the over the counter market. As a result, the stock is subject to sharp swings. Moreover, there is limited current available financial data at this time. But, as the year goes on, we expect the income statement to accurately reflect revenue generation and future potential. We should note that the shares outstanding could increase due to potential capital needs. However, since the proceeds of any future funding would likely be used in part to close on M&A,

## CONCLUSION

PetVivo Holdings is well-positioned to emerge as the standard of care for the treatment of osteoarthritis in dogs and horses, an estimated \$3.2 billion combined annual market. The current available treatments target the ailment's symptoms rather than the cause. Thus, an unmet need exists for PetVivo's approach.

Slated for full-scale commercialization in April, the PetVivo platform directly improves activity, reduces pain, and is characterized by a strong safety profile. Given the efficacy of its treatment, affordable cost, and the emergence of new, profitable revenue streams for veterinarians PetVivo offers a compelling, therapy for beloved pets, vets, and owners alike.

PetVivo has a deep IP portfolio and a new, enviable leadership team. With \$15 million invested in R&D including \$7 million from NIH, PetVivo has a 17 product-deep human and pet therapy. This includes a dermal filler for wrinkles that targets the cosmetic market in which a successful Pivotal FDA Human Trial has already been completed. Sales are forecast to enjoy huge growth. We project sales will leap from \$3M in FY19 to \$12M in FY20 and \$20.5M in FY21.

In our view, PetVivo is worth \$3.00 today. At 3x FY20E sales, the stock trades at a substantial discount to its peer group, which trades at a nearly 6x P/S multiple. Our \$3 target is based upon a 6x sales P/S multiple (as reflected in the table below) and affirmed by a Net Present Value (NPV) calculation. Thus, we rate these shares Speculative Buy.



**MARBLE ARCH**  
RESEARCH, INC.

**Table II. PetVivo Holdings, Inc. Peer Group**

Company Name	Symbol	Price (4/30/18)	Mkt Cap (mil)	FY18E Revs (mil)	FY19E Revs (mil)	18E - 19E Revs Growth	2018E Price/Revs	2019E Price/Revs	PETV @ 6.0x 2019E Revs
Abaxis	ABAX	\$66.57	\$1,511	\$243	\$271	11.5%	6.2	5.6	
Aratana Therapeutics*	PETX	\$5.15	\$236	\$31	\$62	100.0%	7.6	3.8	
Heska	HSKA	\$81.62	\$606	\$140	\$154	10.0%	4.3	3.9	
Idexx Labs	IDXX	\$194.49	\$16,900	\$2,220	\$2,440	9.9%	7.6	6.9	
Zoetis	ZTS	\$83.48	\$40,400	\$5,730	\$6,040	5.4%	7.1	6.7	
Average			\$11,931	\$1,673	\$1,793	27%	6.6	5.4	
<b>PetVivo Holdings*</b>	<b>PETV</b>	<b>\$1.29</b>	<b>\$30.1</b>	<b>\$3</b>	<b>\$12</b>	<b>300.0%</b>	<b>10.0</b>	<b>2.5</b>	

Sources: www.Yahoo!Finance.com, Company websites, Marble Arch Research



## RECENT TRADING HISTORY FOR PETV

(Source: [www.Stockta.com](http://www.Stockta.com))





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Rob Goldman joined Marble Arch Research in 2016. He founded and has operated Goldman Small Cap Research Inc. since 2009. Rob has over 20 years of investment and company research experience as a senior research analyst and as a portfolio and mutual fund manager. During his tenure as a sell side analyst, Rob was a senior member of Piper Jaffray's Technology and Communications teams. Prior to joining Piper, Rob led Josephthal & Co.'s Washington-based Emerging Growth Research Group. In addition to his sell-side experience Rob served as Chief Investment Officer of a boutique investment management firm and Blue and White Investment Management, where he managed Small Cap Growth portfolios and *The Blue and White Fund*.

## ANALYST CERTIFICATION

I, Robert Goldman, hereby certify that the view expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the recommendations or views expressed in this research report.

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