Kareg Corporation
114 East 98th Street
New York, NY 10004
917-470-4811

Sheldon S. Traube
Director of Research
sstanalyst@aol.com
Sept 13, 2016

INDEPENDENT INVESTMENT Research

Initiating Coverage with a Speculative Buy Recommendation

PixarBio Corporation

(XXXX-OTC BB)*

2016 EPS.....loss of 0.23 per share 2016 P/E..... negative**

Indicated Dividend ..... none

Management/Insider Ownership 83%

Corporate Address..... 200 Boston Avenue, Suite 1875
Medford, MA 02155
617-803-8838

Website www.pixarbio.com

***Privately-held, expected to commence trading September 26, 2016.**

****Fiscal years end December 31; *** 97,500,000 shares fully-diluted**

CAPITALIZATION (June 30, 2016)

Long-Term Debt..... None

Stockholders Equity..... $38,869

Total Assets..... $2,316,430

Total Liabilities..... $2,277,561

Shares Outstanding*..... 69,252,425**

Summary and Conclusion

PixarBio is attractive for speculative (accredited) accounts seeking above-average potential appreciation based upon the following considerations:

1. PixarBio Corporation is a pre-clinical stage specialty drug company developing pharmaceutical products based on a proprietary and novel microparticle delivery system to treat acute and chronic pain.

2. PixarBio's leading product NeuroRelease is a new and novel, non-opiate, and non-addictive pain product to treat acute post-surgical pain for use in hospitals and ambulatory surgery centers; and chronic pain without the use of morphine or other opioid-based prescription pain treatments.

3. NeuroRelease delivers carbamazepine, an FDA-approved non-opiate drug (in use since the 1960's) encapsulated in a biodegradable microparticle to be used as a base for extended drug delivery. NeuroRelease provides 14-days of post-surgical pain relief with extended capability from 3 days to 90 days or more.

4. Pain is the largest medical application. Over 100,000,000 surgical and pain treatments are performed annually in the U.S., putting the annual pain market at more than $34 billion annually.

5. All surgical patients experience post-surgical pain, with approximately 50% reporting inadequate pain relief. According to the company, 80% of patients that undergo knee, hip, shoulder, and spine surgery complain of moderate to severe pain, limiting their full physical therapy regimen needed to regain mobility and pre-operative quality of life.

6. PixarBio drugs address the top 15 hospital surgeries, a huge $2.18 billion potential market. There are approximately 100 million surgeries in the US annually, about 70 million surgeries are hospital-based. After 24 hours post-surgery, patients suffer from rebound pain, or sudden onset of pain after Bupivacaine/ Exparel suddenly stops working. An estimated 42 million patients of those having surgeries have more than 3 days of post-operative pain and are treated with some form of pain medications. An estimated 7 million patients are at risk of becoming drug addicts annually. NeuroRelease addresses a high need patient group with little effective treatment options.

7. The abuse and addiction to opioids is a serious global health problem that has reached epidemic proportions, and having devastating effects on communities all around the world.

8. The FDA has announced enhanced black-box warnings of immediate-release opioid pain medications related to risks of misuse, abuse, addiction, overdose and death. Last week the U.S. Surgeon General wrote a letter addressed to every doctor in America asking them to take a pledge to use greater care when prescribing opiate based medications. New York State has also limited opiate prescriptions from 30 to 7 days. The FDA and CDC will continue to tighten regulations on opioid prescriptions and could potentially alter reimbursements. Other states are also instituting curbs.

9. In July, 2016 the US Senate passed CARA, a Comprehensive Legislative Package that advances a large number of treatment and prevention measures intended to reduce prescription opioid and heroin misuse, including evidence-based interventions for the treatment of opioid and heroin addiction, and prevention of overdose deaths.

10. President Obama recently stated: "If we go to Doctors right now and say 'Don't oversubscribe' without providing some mechanism for people in these communities to deal with the pain that they have or the issues that they have then we're not going to solve the problem, because the pain is real, the mental illness is real."

11. Market research supports that the medical community will embrace this drug. In a survey conducted by PixarBio of 242 physicians across 12 surgical specialties (including anesthesiologists) to determine how much post-surgical pain relief is desired, 81% had a preference for non-opioid-related post-surgical options. 57% preferred a14-day regimen and only 12% preferred a 3-day time frame, the current pain relief standard.

12. Exparel is the only FDA approved drug available to treat rebound post-surgical pain for up to three days. Exparel is effective in only 28% of patients in providing relief for three days without the need for prescription of opioids, 72% of patients report moderate to extreme pain after discharge from the hospital. 99% of these patients are discharged with an opioid prescription. One week after surgery, 44% are still taking the prescribed opioids, thus often leading to long-term use.

13. Exparel's current reimbursement rate is $316.50. Its cost exceeds $100 (per dose), cold chain shipping and storage adds another $50 per unit in cost. PixarBio's projected cost is quite low and can be shipped in powder form, and then mixed with saline upon injection in the patient. PixarBio has a high-margin revenue model. The product gross margin is expected to exceed 80%, and net profit margins greater than 40% at prices significantly below Exparel's reimbursement.

14. Exparel was approved as a non-opioid post-surgical pain analgesic for three days post-operative pain treatment only. Exparel is a liposome injection of bupivacaine administered into the surgical site. Its multi-vesicular liposomal product delivery (DepoFoam technology) allows a delayed release of medication over 72 hours; the FDA rejected use beyond that time frame. The efficacy is dependent on the doctor's skill in administrating the drug, so can vary from patient to patient. Also, since Exparel works by opening from the inside out it often provides uneven release of the drug.

15. Trials were conducted on bunionectomy and hemorrhoidectomy surgeries. Bone pain is a lot more severe, so it is logical to assume that its effectiveness will even be lower for bone related surgeries than what was reported in Exparel's clinical trials.

16. Pacira Inc., the maker of Exparel, previously had achieved a $2.5B market capitalization on just around $200 million in revenue. PixarBio should exceed the market success of Pacira through superior product development, with greater product efficacy, superior management and roll-out strategy.

17. In September, 2014 Pacira received a warning letter from the FDA for off-label marketing practices, limiting sales and marketing to the two procedures on their label. Pacira filed a lawsuit against the FDA and in December 2015 it reached a favorable resolution, re-instating its broad indication and an additional packet supplement supporting use in oral surgery and Transverse Abdominal Plane infiltration (iTAPs).

18. Exparel revenues plateaued in Q2 2016, and we believe that the low 3% market penetration achieved after 4 years (FDA approved in 2011 and marketed since 2012), in a market with no other non-opioid competitors reflects Exparel's limited pain efficacy.

19. David Kaplan joined PixarBio as its Chief Commercial Officer, and will orchestrate the effort to bring NeuroRelease™ to market. David previously worked for Pacira managing the Exparel marketing effort after his predecessor failed.

20. PixarBio has a low-risk development model:

a. Requires less capital and time: two products are expected to enter clinical trials under a 505(b)(2) protocol in 2017: a combined Phase I and Phase II Small Nerve Fiber Study of Shoulder Pain Study of 160 patients which should take about 90 days and a Phase III Small Nerve Fiber, Post-Operative Shoulder Pain, 100 patient trial also in 2017. The company also intends to undertake a Combined Phase I and Phase II Large Nerve Fiber Study for post-operative knee pain

consisting of 160 patients and a Phase III large nerve fiber post-operative Knee Pain trial in 2017 consisting of 100 patients; versus one drug under a traditional drug model for an estimated $100 million investment over a 5-10 year period. The company could file for fast track (accelerated) approval which would result in earlier FDA approval.

b. Management expects approval from the US FDA in 2018 for both the 14 day dose drug for Post Shoulder Surgery Pain and the 14 day Post Knee Surgery Pain, with sales in 2019. With approvals for both small and large nerve 14 day doses, the product will be able to be used for pain treatment for any part of the body.

c. PixarBio's therapy employs an already approved drug, Carbamazepine (off patent) and its microparticle delivery system. There are no changes to standard of care so no training is needed for surgeons to use the technology. No Phase I trials are required under the 505(b)(2) regimen.

d. The company has a very strong clinical hypothesis, and builds upon prior success in the Lab and in animal studies,

e. "Picket Fence" Patents: PixarBio has a strong pain patent portfolio based upon composition, kinetics, method of use, and duration of efficacy claims that don't expire before 2034.

f. PixarBio has a strong management and advisory team, with deep experience in the company's key business areas. Its Chief Executive Officer, Frank Reynolds is a serial entrepreneur that founded and served as Chairman, C.E.O., and C.F.O. of InVivo Therapeutics until his retirement in August of 2013. He took the company public in 2010 and it reached a market cap of $520 million in 2013. He is also the co-inventor on more than 50 patents. Robert Langer, co-founder, a biomedical engineer at Massachusetts Institute of Technology, has launched around 30 start-ups and holds roughly 1,100 patents, and is considered the world's top bio-medical engineer, and the most-cited engineer in the world. Langer has spun out more commercial technologies and treatments from his lab than any biotech companies.

21. PixarBio intends to also pursue the chronic pain segment, An estimated 100 million Americans suffer from chronic pain compared to 25.8 million with diabetes, 16.3 million with coronary heart disease, 11.9 million with cancer and 7.0 million with stroke. The annual costs associated with treating chronic pain are extraordinary, according to a recent Institute of Medicine Report: *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*, that estimated costs to society between $560-$635 billion. This finding is in line with a recent Canadian-based study that concluded that the annual cost of treating chronic pain is between $47B and $60 billion, more than HIV, cancer and heart disease, combined.

22. PixarBio estimates that if just 10 percent of the 42 million surgeries being treated with pain medications for acute post-surgical pain were treated with non-opiate gradually released into the body that would translate into a $1.3 billion market in the US alone.

23. We estimate revenues of $80 million in 2019, and a loss of $8 million. Management estimate $180 million in sales in 2020 with additional FDA drug approvals (please read below), and $39.6 million in net income. With additional FDA approvals for the seven day and three day drugs projected and additional market share gains, over the next number of years, revenues should rise dramatically. PixarBio is currently conducting market research to determine the optimal sales price that will allow NeuroRelease to dramatically cut the lead time for reimbursement by formularies, rapidly gain market share and provide the company with 80% gross margins and 40% pretax margins.

24. Management has "skin in the game". Frank Reynolds, CEO has about $10 million in cash invested and owns 62.9% of the stock and Bob Langer holds 16.0%.

25. The company is currently burning about $675,000 a month and expects to burn $2.115 million in Q4.

26. PixarBio's first production facility will have the capacity to manufacture 10,000,000 units per year, where Pacira has manufacturing limitations (due to a complicated structure and manufacturing process) and can only manufacture 1,000,000 units per year.

27. PixarBio's goal is to meet the market demand during the product roll out and achieve 90% brand awareness by 2019, with a market adoption rate exceeding 30% within the first five years of launch.

28. To-date the company has raised about $13.5 million in capital. PixarBio is currently raising $20-$30 million via a private placement consisting of one common share and a 7 year warrant with a $4.50 exercise price to be used to fund clinical studies, acquire facilities, machinery, and additional personnel to scale up and build out processes and cGMP production facilities. Management has stated that a large investment bank provided a letter of intent to take the company public at a valuation of $225 million, the valuation of the current private placement is $175 million. A May 2016 valuation performed by Beta One Consulting commissioned (and paid for) by the company arrived at a $772 million valuation.

29. Drug development has increasingly being relegated to the "juniors" with big "Pharma" willing to acquire the technology or drug after it has been de-risked. Nearly 70% of the industry clinical pipeline is attributed to small emerging companies. There is a significant step up in valuations of bio-tech companies with Phase II assets. (The company does not have to conduct Phase I studies under the 505(b)(2) regimen and should commence two combined Phase I and Phase II studies in 2017).

30. We believe PixarBio could become an attractive acquisition candidate for a large Pharma already in the pain space such as Pfizer or Purdue.

31. PixarBio is currently a privately-held company, so investment in the company's shares is suitable for risk-oriented, accredited investors only.

32. PixarBio has acquired a small operating company which PixarBio is reversing into, and the PixarBio shares are expected to be trading publicly in the beginning of October 2016 under the symbol XXX on the Bulletin Board.

33. Our price target: $10 within the next months. This target could prove conservative if Phase II results show opioid patient use reduction levels (over 14 days) significantly above Exparel's 18% level (over three days).

The Company

Based in Medford, MA. PixarBio Corporation, a Nevada corporation, was founded in August 29, 2013 by Francis M. Reynolds, Dr. Robert S. Langer and Katrin Holzhaus to develop novel drug delivery systems for neurological disease such as epilepsy, Parkinson's disease and spinal cord injury. Dr. Jason Criscione was recruited to co-found PixarBio as Chief Technology Officer to co-invent NeuroRelease. The company has 40 employees and also has offices in in Salem, NH, and Fort Lee, NJ and a vivarium in Cambridge, MA.

PixarBio Corporation is a specialty pharmaceutical company focused on the development, commercialization, and manufacturing of pharmaceutical products based on the company's proprietary microparticle delivery system for use in hospitals and ambulatory surgery centers as targeted non-opiate drug delivery to treat post-operative and chronic pain. The company is also continuing to conduct research and development for injectable neuro-materials for spinal cord injury, epilepsy, and Parkinson's disease. PixarBio has more than 10 products under development.

PixarBio co-founder Frank Reynolds founded InVivo Therapeutics in November 2005 to develop the first NeuroScaffolds to treat acute traumatic spinal cord injury. Mr. Reynolds in 2008 invented the first NeuroScaffolds ever conceived to treat or neuro-protect an acute spinal cord injury. Mr. Reynolds also led 100% of invention of the many iterations of NeuroScaffolds in addition to a significant portfolio of injectable non-opiate pain treatments for acute and chronic pain based on his hydrogel drug delivery system.

In 2012, Mr. Reynolds selected one of his NeuroScaffold devices to seek FDA approval to treat acute spinal cord injury. In the spring of 2013, while leading clinical studies and regulatory affairs, Mr. Reynolds received the first FDA approval to begin human studies on his NeuroScaffold. Due to a fractured foot that took 30 months to heal, Mr. Reynolds retired from InVivo Therapeutics in August 2013. The NeuroScaffold human studies resulted in the first humans to ever regain the ability to walk in pools and on land in braces after the most severe spinal cord injuries known as ASIA A spinal cord injuries. Lastly, the patients that received the NeuroScaffolds report improved bowel, bladder and sexual function.

Mr. Reynolds has been in chronic pain since December 1992 when he was paralyzed during a spine implant surgery. The spine implant was rejected by the FDA for use in the spine in 1991 but nevertheless continued to be used in and harmed more than 500 patients including Reynolds.

As an inventor of Pharma, Biotech, and Medical Device inventions Mr. Reynolds has been quite successful. Since 2010, Mr. Reynolds has raised over $100,000,000 and has created over $675,000,000 in market cap valuation for his investors.

Since Q4 2006, Dr. Robert S. Langer has been a key advisor to Mr. Reynolds. Langer is widely regarded as the co-founder of the fields of tissue engineering, drug delivery, regeneration and angiogenesis inhibitors. Bob holds more science and medical patents than any person in history, including over 50 patents applications filed along with PixarBio co-founder Frank Reynolds.

NeuroRelease™ Technology

NeuroRelease™ combines an FDA approved non-opiate drug which is encapsulated in a biomaterial platform that will be used as a base for extended drug delivery. This technology has wide applications. Specifically, NeuroRelease™ combines FDA approved Carbamazepine, a non-addictive non-opioid drug approved by the FDA in the late 1960's in pill form, with indications to treat both epilepsy and for trigeminal neuralgia or chronic pain, with PLGA micro particles which utilize the same proven delivery system used in several FDA-approved and marketed injectable suspension products such as Risperdal Consta, Vivitrol, and Lupron Depot. Carbamazepine is an ideal drug for post-operative pain via its ability to block sensory signals, without negatively impacting motor function, and NeuroRelease provides controlled and sustained local delivery of the carbamazepine to achieve therapeutic efficacy (reduction of pain) w mg/day with no bad side effects. Delivered daily, doses are approximately 3 mg vs. 300-1,200 for traditional carbamazepine. Both carbamazepine and the PLGA encapsulated microparticles delivery system have never been found to be toxic.

PixarBio has been conducting pre-clinical studies on NeuroRelease for nerve block procedures (e.g. knee, hip, and shoulder) to demonstrate pain relief for up to 14 days post-surgery. Nerve block is an injection of a local anesthetic into or near nerves to control pain. Nerve blocks are generally administered via single injections, however they generally provide short term relief so for extended pain management, bupivacaine is delivered via a catheter by an external pump.

NeuroRelease is intended to be used for post-operative, acute and chronic pain. Based on the preclinical data, the company believes that it will eliminate or significantly reduce the need for morphine in many clinical settings and provide patients with effective pain treatment without risks of addiction, and without the loss of motor function. NeuroRelease™, has achieved sustained therapeutic release of non-opiate drugs for post-operative, acute and chronic pain in pre-clinical

models. Clinical studies are expected to first focus on nerve block treatments for knee implants, shoulder surgery, and sciatica, extending later into dental, trauma, and neuropathic pain, and cancer pain.

NeuroRelease is following a 505 (b) (2) pathway through the FDA, which is the FDA fastest approval pathway for new drugs. *505 (b)(2) new post-op pain drugs benefit from a speedy, less than 5 year FDA process as opposed to up to a 10 year FDA pathway for Non 505(b)(2) new drugs.* To quality for 505 (b) (2) pathway, all components of the treatment must already be FDA approved and they are simply being used in a new manner. Carbamazepine, a drug in pill form that is FDA approved for trigeminal neuralgia pain is delivered by PixarBio in a novel way using PLGA, or poly(lactic-*co*-glycolic acid), microparticles drug delivery system, in a powder form to be sprinkled on wounds for incision pain treatment, or injected as a nerve block along nerve fibers (cables).

NeuroRelease Highlights:

- As a 505 (b) (2) product NeuroRelease has a speedy FDA approval pathway.
- One label for small nerve block and one label for large nerve block.
- PixarBio intends to conduct large nerve block on total knee replacement (TKA) surgeries for large nerve approval.
- The company plans to perform a small nerve block human study of the brachial plexus nerve during shoulder surgery.
- PixarBio expects that two clinical studies in 2017 will lead to US FDA approval in 2018 for use as a Nerve block anywhere in the body.

The increasing national awareness of the negative impact of opioids and a push towards reducing their use during and after surgery, should propel strong market adoption of NeuroRelease.

The Post-Surgical Pain Market

Pain is the world's largest medical application. Over 100,000,000 surgical and pain treatments are performed annually in the US, putting the annual pain market at more than $35 billion annually.

There are an estimated 70 million hospital-based surgeries in the U.S. annually (according to the US Bureau of Labor Statistics) of which an estimated 42 million surgery patients suffer from acute post-surgical pain, and are treated with pain medications. If 10 percent of these surgeries are treated with non-opiate pain treatments that are gradually released into the body that would represent a market opportunity in excess of $1.3 billion according to PixarBio.

All surgical patients experience some level of post-surgical pain, but 50% of them report inadequate pain relief. Unrelieved pain results in patient suffering and can lead to other health problems resulting in delayed recovery from surgery, and potential longer hospital stays, or higher health care costs.

Current multimodal therapy for post-surgical pain, includes wound infiltration with local anesthetics during surgery, combined with the systemic administration of opioid, and non-steroidal drug or NSAI, analgesics.

Local Anesthetics

Post-surgical pain treatment usually begins at the end of the surgery with local anesthetic such as bupivacaine being administered by local infiltration. Efficacy of conventional bupivacaine and other local anesthetics are limited, lasting seven hours or less. Post-surgical pain increases for the next few days after surgery, but local infiltration is not practical, so other solutions to manage the pain are needed.

NSAIDs

Injectable NSAIDs such as Ketorolac and Ibuprofen are often used as alternatives to opioids because they do not cause constipation or depression, but are limited in use post-surgically because they increase the risk of bleeding, gastrointestinal and renal complications.

Opioids

Treating moderate pain with opioids has reached epidemic proportions in the U.S. Ninety-nine percent of patients suffering from surgical pain are prescribed opioids. Opioids include morphine, codeine, fentanyl, methadone, and ephedrine. Morphine and codeine account for an estimated 62% of the overall market. Opioids are the standard of care, but there are potentially severe side effects such as sedation, nausea, vomiting, urine retention, itching, headache, constipation, cognitive impairment, respiratory distress, and even death. As a result of these side effects, patients may need to take additional medications or treatments, stay longer in hospitals or ambulatory surgery centers, or post anesthesia units thus substantially increasing healthcare costs.

The worldwide market for opioids in 2015 was estimated at $34 billion (100,000,000 surgical procedures), and is expected to grow to $42 billion by 2021. Beta One Consulting estimates that nearly 267 million prescriptions for opioids were filled in the US in 2015, generating about $18 billion in revenues to pharmaceutical companies. On medical use of prescription painkillers costs health insurers up to $72 billion in direct health care costs according to the Centers for Disease Control.

Major players in the opioid market include Pfizer Inc., Purdue Pharma, Boehringer Ingelheim, Janssen pharmaceuticals, Inc., Sanofi, Actavis Plc, Mallinckrodt Pharmaceuticals, and Endo Pharmaceuticals.

There are about 70 million surgeries performed annually (US Bureau of Labor Statistics). About 42 million of these patients require some form of pain medication for acute post-surgical pain requiring more than 3 days of post-operative pain. After 24 hours post-surgery, patients suffer from rebound pain, or sudden onset of pain after Bupivacaine/ Exparel suddenly stops working. 72% of patients report moderate to extreme pain after discharge from the hospital. 99% of patients are discharged with an opioid prescription. One week after surgery, 44% are still taking the prescribed opioids, thus often leading to long-term use. An estimated 10% of patients who undergo surgeries annually are at risk to become drug addicts.

The CDC reported that 28,000 people died in 2014 from misuse of prescription drug medication and heroin abuse, more than any year to-date. More than half of these overdoses deaths involved a prescription opioid.

In July 2016, the U.S. Senate passed and voted to send opioid legislation known as the Comprehensive Addiction and Recovery Act (CARA) to President Obama for his signature. The U.S. House recently overwhelmingly voted to approve CARA. This bipartisan measure advances a large number of treatment and prevention measures intended to reduce prescription opioid and heroin misuse, including evidence-based interventions for the treatment of opioid and heroin addiction and prevention of overdose deaths.

President Obama recently stated: “If we go to Doctors right now and say ‘Don’t oversubscribe’ without providing some mechanism for people in these communities to deal with the pain that they have or the issues that they have then we’re not going to solve the problem, because the pain is real, the mental illness is real.”

New York State also passed a Comprehensive Legislative Package which limits opioid Prescriptions from 30 to 7 Days, Requires Mandatory Prescriber Education on Pain Management to Stem the Tide of Addiction, Eliminates Burdensome Insurance Barriers to Treatment. Other states are also passing or considering similar legislation.

The FDA is tightening regulations on the prescription of Opiates. In 2013 the FDA stated that extended release and long-acting opioid analgesics are not indicated for as needed pain relief, and also require a new boxed warning of neonatal withdrawal syndrome (NOWS). Changes in drug labeling were in dosage and administration, warnings and precautions, drug interactions, use in specific population, patient counseling information, and the medication guide. In Q2 2016, the FDA assigned "Black Labels" to all opioids and opiates marketed in the US. In addition, the Center for Disease Control (CDC) updated guidelines to say Opiates/Opioids should not be used in people who are in pain more than 7 days, outside of cancer, palliative care, and end of life care, stating that non opioid therapy is preferred for chronic pain.

The FDA and government agencies will continue to tighten regulations on the use of opioids, requiring additional studies, limiting use of opioids on non-cancer conditions, and making it harder for doctors to prescribe these drugs, and potentially even altering reimbursement rules and rates for these drugs.

This bodes well for PixarBio. The market is in desperate need of an effective non-opioid solution to "rebound pain", and chronic pain presents a huge opportunity for PixarBio (assuming FDA approval) to potentially capture significant market share.

In the immediate post-surgical period, opioids are often administered via patient controlled analgesia or PCA systems, the cost per three days of PCA post management system can reach up to $500, not including costs of opioid treatment complications. To try to minimize opioid usage many hospitals use elastomeric bag systems that deliver bupivacaine to the surgical area via a catheter over time. Both systems delay patient ambulation, are clumsy, and introduce potential catheter related infections.

Competition

Exparel: The only FDA approved extended-delivery post-surgical pain drug

Pacira Pharmaceuticals, Inc. is currently the only player in the non-opioid extended release post-surgical pain drug space. Exparel is a non-opioid, post-surgical pain analgesic which received FDA approval in 2011. Exparel utilizes Pacira's DepoFoam technology to deliver therapeutic levels of bupivacaine for up to 72 hours. DepoFoam is a multi-vesicular liposomal product delivery technology that encapsulates drugs, without altering their molecular structure, enabling a delayed release of medication over a targeted period of time. Exparel is delivered by injection of bupivacaine into the surgical site to provide post-surgical analgesia. Pacira key patents expired in 2013 and on their last conference call they stated they can rely on an expensive FDA compliant manufacturing facility, as the chief barrier to entry into their liposomal drug delivery field.

The drug received FDA approval for three-day post-surgical pain treatment only. Priced at $316.50, Exparel was launched in 2012 and generated $76 million in sales in 2013, and $189 million in 2014. In September 2014, the company received an FDA warning letter for off-label marketing practices that effectively limited its sales and marketing efforts to bunionectomy and hemorrhoidectomy, the two procedures in their label, despite the broad label originally granted by the FDA.

In March 2015, the FDA rejected Exparel for nerve block shots. Pacira filed a lawsuit against the FDA and in December 2015 reached a favorable agreement with the FDA which re-confirmed the broad indication and claim of 72-hour efficacy in the original label, and included a supplement to the package insert supporting use in oral surgery and Transverse Abdominal Plane infiltration (iTAPs). Sales of Exparel have not bounced back quickly, likely suffering from the FDA-instituted prior limitations and its resulting negative impact with some surgeons, and slowdown in physician training on the use of the product. In addition, doctors report that the drug really only provides 24-48 hours of pain control. (This makes sense, since Exparel's storage as an aqueous suspension

induces release of bupivacaine into the suspension media as the diffusion gradients approach equilibrium, causing fluctuations in duration of efficacy observed in the clinical administration of Exparel, as the half-life of bupivacaine is short-lived, hence, less than 24 hours of effective pain relief). Only 28% of Exparel patients remained opioid-free at 72 hours.

An estimated 72% of Exparel patients need to also take opiates within 25 hours after surgery. The average of median time to opioid rescue is 15 hours post-surgery. 99% of Exparel patients leave the hospital with an opiate prescription.

According to PixarBio, Exparel has very strong, 90% brand awareness but only 3% market adoption. Sales from April to May 2016 were up only about an estimated 0.80 (though for the June 2016 quarter results did beat street estimates a bit). For the current year, the company estimates $280 million in Exparel sales indicating less than 20% Exparel sales growth 2017 vs. 2016.

Disadvantages of Exparel:

- Physician training takes many hours and success is technique specific, resulting in highly variable treatment outcomes between physicians
- Knee replacement surgery (extremely painful) often requires 60-100 injections and Exparel takes up to 6 hours to take effect
- Filing of a neurotoxic Adverse Events report in June 2016
- FDA approved for 3 days of pain relief, but 72% of patients have opiate rescue by 25 hours post-surgery so the promised return on investment for the hospital is overstated
- In 2012, the FDA approved Exparel for a maximum three days post-op pain treatment of hemorrhoidectomy and bunionectomy.
- Exparel's lipid based drug delivery system are not biodegradable and does not allow re injections to realistically extend pain treatment beyond 2-3-4 days
- Key Exparel patents expired in 2013
- Manufacturing is limited to around 1,000,000 doses per year
- Exparel blocks both motor and sensory fibers, while NeuroRelease effects just sensory fibers so there is no impact on walking or moving around
- Exparel's liposomal delivery is based on DepoFoam, a foam drug delivery system that releases the drug as soon as manufacturing is complete; so the drug is releasing while waiting to be used in a patient.
- Exparel has to be shipped cold from Manufacturing to patient body.
- Exparel Total knee arthroscopy (TKA) surgeries usually require 60-100 injections per patient, NeuroRelease knee nerve blocks have two injections for a TKA surgery, and NeuroRelease has one Nerve Block injection for all other nerve blocks around the body.

The Exparel liposomal drug delivery system (DepoFoam) which was selected in 1993 by Pacira, has the following biomaterials limitations: (source: PixarBio)

- "Popping Mechanism" so little-to-no control over release rate due to diffusion-limited release kinetics.
- It is not able to achieve long-term, sustained delivery of drugs so it is highly unlikely that it will ever be able to treat chronic pain according to PixarBio.
- Liposomal membrane instability that translates to inconsistent release profiles because of the liposomal "popping mechanism" thus no control of release.
- Not bioresorbable, so the residual material must be cleared either by the reticulo-endothelial system (RES) or by membrane fusion and lipid bi layer reorganization.
- The average particle size is about 32 microns which restricts the selection of needle gauge for administration. Exparel does not use standard needles.

It took Pacira 19 years after its patent approval to get to market, and its key compositions patent expired in 2013 and the rest of its patents expire in 2018, thus removing barriers to potential competition. Pacira is therefore seeking potential acquisitions to broaden its market. PixarBio is well-positioned to enter the market with a superior and more versatile drug delivery platform, longer term efficacy, and more robust patent protection.

PixarBio believes that NeuroRelease is the only non-addictive and non-toxic pain treatment that can treat pain for more than 4 days under review at the FDA under the 505 (b)(2) pathway.

NeuroRelease: ONLY Non-Addictive Post-Op Pain Treatment at the FDA 2016-2021
(Source: PixarBio)

Supplier	Product Name	Active Ingredient	Product Develop Status	Duration of Treatment	Expected FDA Approval
Generic	Marcaine	Bupivacaine	Approved/Marketed	Up to 8-24 hours	On The Market
Generic	Bupivacaine	Bupivacaine/Ropivacaine	Approved/Marketed	Up to 8-18 hours	On The Market
Pacira	Exparel NB	Bupivacaine	Approved/Marketed	Up to 1-3 days	2018
Heron	HTX-011	Bupivacaine/Meloxicam	Phase III	Up to 4 days	2018
Durect	Posimir	Bupivacaine	Phase I	Up to 2-3 days	2018
PixarBio	**NeuroRelease**	**Carbamazepine**	**Pre-Clinical 505(b)(2)**	**14 Days 7-Day 90-Days**	**14 Day 2018 7-Day 2018 90-Day 2020**

Post-Surgical Pain: A Huge Market Opportunity for PixarBio

PixarBio Targeted Market Opportunity- Product Launch

PixarBio is conducting significant market research to determine the optimal price for NeuroRelease, management believes it is between $150.00 and $316.50 per vial.

Large Potential Market: If NeuroRelease would achieve a 57% market adoption for the Top 15 Surgeries in the typical USA hospital that would represents $2.179Billion in annual sales.

PixarBio's Targeted Annual Nerve Block Surgical Procedures: 5.3 million

Revenues: $1.7B @ $316.50 per dose and $928MM @ $175 per dose

- Hernias: 1,000,000
- Total Knee Arthroplasty: 929,000
- Reduction of Fracture: 995,000
- Rotator Cuff: 660,000
- Colorectal: 600,000
- Spine (TLIF/PLIF): 1,189,624
- Total Hip: 332,000
- Foot & Ankle: 300,000
- Breast Augmentation: 280,000
- Bariatric: 200,000
- Mastectomies: 180,000
- Tummy Tuck: 130,000
- Breast Reconstruction: 100,000
- ACL Repair: 250,000
- Total Shoulder Arthroplasty: 708,000

Market Opportunity: Top 15 Surgeries in the USA Represents $2.179B Annual Sales

TOP 15 NON-OPIOID, NON-ADDICTIVE POST-OP OPPORTUNITIES - PROCEDURES/SURGERIES	% Responders want a Non-Opioid	3-day	14-day	Total Procedures	Total Dollarized	14-Day Dollarized
	A	B	C	D	E	F
Anesthesia-nerve blocks/injections (Knee)	95%	30%	35%	4,502,370	$ 1,425,000,105	$ 473,812,535
Anesthesia-nerve blocks/injections (Shoulder)	95%	33%	33%	2,251,185	$ 712,500,053	$ 225,625,017
Spine Surgery	81%	0%	100%	1,189,624	$ 376,515,996	$ 304,977,957
Fracture Repair	80%	0%	82%	995,000	$ 314,917,500	$ 207,475,059
Anesthesia-nerve blocks/injections (Hip)	85%	40%	33%	2,251,185	$ 712,500,053	$ 201,875,015
Knee Replacement	90%	0%	73%	929,000	$ 294,028,500	$ 194,058,810
C-Section Delivery	90%	20%	40%	1,300,000	$ 411,450,000	$ 148,122,000
Injection-paravertebral facet joint-w/wo ultrasound	60%	27%	40%	1,026,856	$ 324,999,924	$ 77,999,982
Shoulder Arthroscopy	65%	7%	53%	708,000	$ 224,082,000	$ 77,681,760
Hip Replacement, Total	80%	0%	71%	332,000	$ 105,078,000	$ 60,044,571
Hysterectomy	90%	11%	44%	400,000	$ 126,600,000	$ 50,640,000
Rotator Cuff Tear Repair	75%	0%	69%	272,148	$ 86,134,842	$ 44,413,278
Amputation	100%	15%	50%	247,000	$ 78,175,500	$ 39,087,750
Hip Nailing for Hip Fracture	55%	0%	69%	307,100	$ 97,197,150	$ 37,009,684
Ligament Reconstruction – ACL, MCL, PCL	70%	0%	67%	250,000	$ 79,125,000	$ 36,925,000
Averages/Total Dollars	81%	12%	57%	16,961,468	$ 5,368,304,622	**$ 2,179,748,417**

Source: PixarBio

Competitive Market Analysis- The Bupivacaine/Opioid Issue

- In Q2 2016, the FDA gave “Black Box” label to all Opioids/Opiates which means every dose has the potential to do harm to the body and may lead to death.
- In Q2 2016, the US Center for Disease Control (USCDC) issued Opioid/Opiates Use guidelines, indicating that Opiates should NOT be used for people in pain for more than 7 days.
- PixarBio’s non-addictive competitors are Bupivacaine based pain treatments and they are all low potency drugs and are concentration and time dependent so they risk neurotoxicity longer than 4 days. Bupivacaine products struggle to treat pain longer than 4 days due to small body cavity space to inject low potency Exparel. ON-Q pumps (catheter delivered bupivacaine) are FDA approved for 5 days but a one-time injection of NeuroRelease is preferred to a catheter pump by patients and clinicians.
- All abuse deterrent Opioids/Opiates are physically addictive, they simply cannot be smoked, crushed, or injected by drug addicts.
- NeuroRelease’s bupivacaine competitors are concentration and time dependent thereby increasing risks of neuro-toxic and cardio-toxic events.

PixarBio Advantages:

- PixarBio’s NeuroRelease appears to be quite effective to produce postsurgical analgesia.
- PixarBio’s microparticle drug delivery system slowly delivers the drug over time to extend the pharmacologic effect of NeuroRelease.
- NeuroRelease significantly reduces or eliminates opioid consumption.
- NeuroRelease eliminates the need for catheters and pumps that may hinder recovery
- NeuroRelease has a strong pre-clinical safety and tolerability profile
- NeuroRelease is the only analgesic for rebound pain that is effective for 14 days.
- NeuroRelease appears to cause no significant side effects.
- NeuroRelease does not negatively impact motor ability, hence quicker time to physical therapy and quicker exit from the hospital and recovery,
- NeuroRelease Clearance by biodegradation
- NeuroRelease requires no changes to standard of care
- NeuroRelease has rapid onset of efficacy

A survey was conducted among 242 physicians across 12 surgical specialties including anesthesiologists to determine how much post-surgical pain relief was desired for their patients and in which procedures a 14-day options would present a benefit. While the initial targeted indication for NeuroRelease will be in Orthopedics, the company also surveyed the general surgical market given the company's plans on additional indications across a variety of surgeries based on market demand.

In the first chart below, both anesthesiologists and orthopedic surgeons had a preference for -opioid-related postsurgical options. There was, however, significant difference between anesthesiologists and orthopedic surgeons related to the preference of a 3-day or 14-day treatment. While the anesthesiologists were split between the two choices, orthopedic surgeons overwhelmingly chose a 14-day option with none of them preferring a 3-day option. There is discussion that the difference between these two specialties may be related to the fact that orthopedic surgeons, not anesthesiologists, are generally responsible for the management of a patient's pain control once they leave the hospital. The second chart reviews the top 15 surgical procedures where a 14-day therapy was preferred.

Knee, Hip & Shoulder Survey	**% Responders Preferring Non-Opioid**	**3-day**	**14-day**
Orthopedic Surgeons			
Knee Replacement	90%	0%	73%
Hip Replacement, Total	80%	0%	71%
Shoulder Replacement	85%	0%	69%
Anesthesiologists			
Anesthesia-nerve blocks/injections (Knee)	95%	30%	35%
Anesthesia-nerve blocks/injections (Shoulder)	95%	33%	33%
Anesthesia-nerve blocks/injections (Hip)	85%	40%	33%

Top 15 Procedures Preferring 14-Day Pain Control	**% Responders Preferring Non-Opioid**	**3-day**	**14-day**
Anesthesia-nerve blocks/injections (Knee)	95%	30%	35%
Anesthesia-nerve blocks/injections (Shoulder)	95%	33%	33%
Spine Surgery	81%	0%	100%
Fracture Repair	80%	0%	82%
Anesthesia-nerve blocks/injections (Hip)	85%	40%	33%
Knee Replacement	90%	0%	73%
C-Section Delivery	90%	20%	40%
Injection-paravertebral facet joint-w/wo ultrasound	60%	27%	40%
Shoulder Arthroscopy	65%	7%	53%
Hip Replacement, Total	80%	0%	71%
Hysterectomy	90%	11%	44%
Rotator Cuff Tear Repair	75%	0%	69%
Amputation	100%	15%	50%
Hip Nailing for Hip Fracture	55%	0%	69%
Ligament Reconstruction – ACL, MCL, PCL	70%	0%	67%
Averages	**81%**	**12%**	**57%**

Pre-clinical Data

PixarBio has been conducting extensive pre-clinical studies on NeuroRelease for nerve block procedures (e.g. knee, hip and shoulder). Studies have demonstrated that the product provides pain relief for up to 14 days post-surgery. The company maintains an in-house vivarium in Cambridge, MA to maximize R&D output.

NeuroRelease System: Pre-Clinical Data Overview Highlights

- **NeuroRelease Biomaterials Data Reproducibly fabricate the microparticles** using a simple and scalable emulsification method.
- **Reproducibly control the loading of carbamazepine** across the range of 0.5-20 weight percent.
- **Reproducibly control the particle size and surface characteristics** to yield reconstitutable microparticles.
- Microparticle size was selected to ensure that NeuroRelease would be easily injected without changing the standard of care for peripheral nerve blocks.
- Microparticle polydispersity was specifically engineered to achieve rapid onset of therapeutic efficacy.
- **Reproducibly control the release rate** of carbamazepine and microparticle degradation rate by controlling the biomaterial science properties and microparticle size.
- *In vitro* release kinetics were evaluated for all materials fabricated to show a range of release rates spanning durations of days, to weeks, to months.
- **Suitability of terminal sterilization with e-beam has been demonstrated.**

Regarding the polymer biomaterial selected for the single dose peripheral nerve block preclinical studies, carbamazepine is released at therapeutically efficacious levels for 14 days and the material degrades within 6 weeks post-injection.

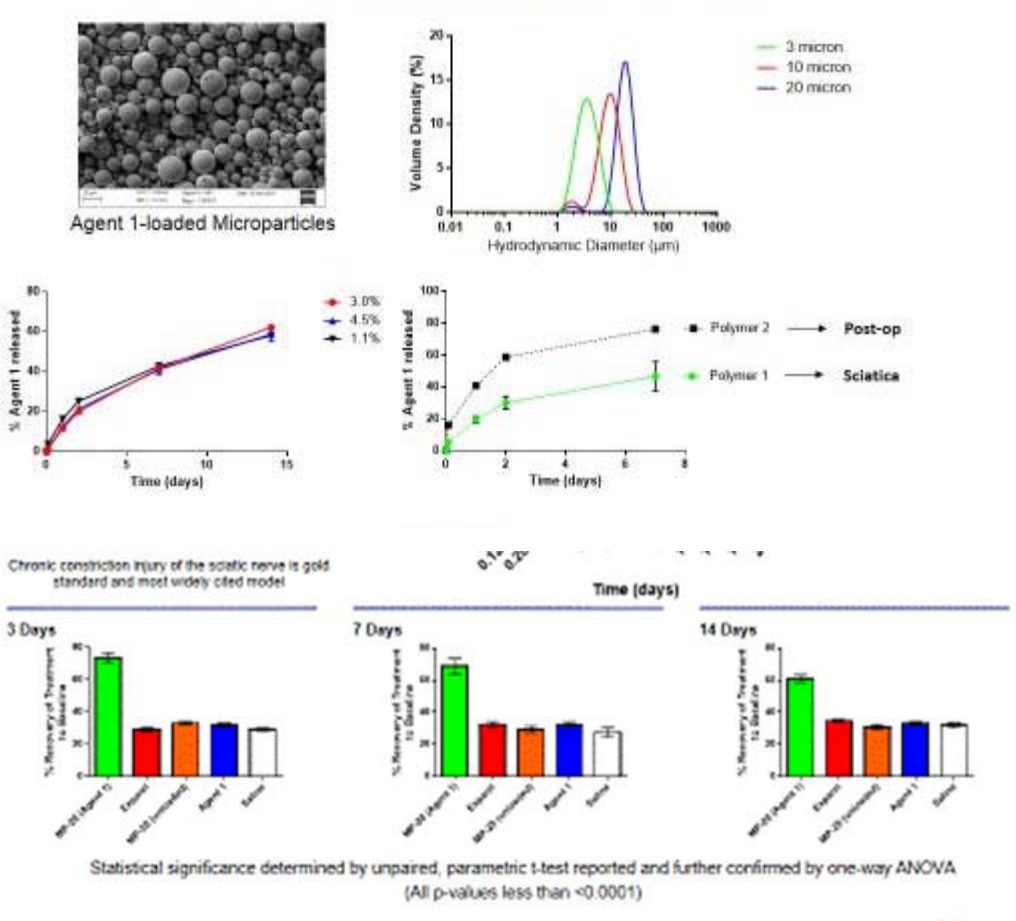
As can be seen from the above chart, the preclinical behavioral data is 99.99999 (5-9's) of reliability and are easily replicable.

PixarBio has performed safety and toxicology preclinical studies in rodents and is currently performing safety and toxicology preclinical studies in pigs to enable IND submission. Histopathological analysis of the perineural depot injection site in rodents shows no neurotoxicity, no myotoxicity, and no evidence of foreign body response. Pharmacokinetics analysis in rodents showed orders of magnitude lower systemic concentrations of carbamazepine compared to orally administered carbamazepine. There was no motor deficit exhibited, which was confirmed with gate analysis.

Replicable efficacy data 99.99999 has been obtained, demonstrating sustained peripheral nerve block for 14 days in the "gold standard" rodent (rat) model.

PixarBio compared efficacy with bupivacaine and Exparel and found that sciatic nerve block with either bupivacaine or Exparel only provides therapeutic efficacy for 4 hours.

The chart below shows that when combined, PLGA microparticles and carbamazepine provide therapeutics pain effect not achieved by Exparel. NeuroRelease has achieved effectiveness across timelines.



The data shows that when PLGA microparticles is combined with Carbamazepine, the results shown in the light green NR 14-day treatment profile, that provides therapeutics pain effect not achieved by Exparel.

In September, 2015 the company had a PIND (Pre-IND) meeting with the US FDA confirming PixarBio's IND package and discussing its clinical study design.

PixarBio's Projected TimeLine for NeuroRelease Pain:

2016-2017	Build out cGMP Facility, Submit & Receive IND approval
2018	Submit NDA to FDA for 14 & 7 Day. Expect FDA approval for 7 & 14 Day, complete human study
2019	Receive FDA approval for 3-day "Sprinkle On" pain product
2020	Receive FDA approval for 90 day pain product

In light of the non-availability of an effective, longer-acting non-opioid post-surgical pain product in the market there is a chance that PixarBio might get expedited review.

Clinical Studies

PixarBio intends to conduct trials to receive approvals for small nerve, nerve blocks-shoulder and the second for large nerve, nerve blocks- knee. FDA approval for these two labels, will allow the company to market NeuroRelease for nerve blocks around the entire body.

Human trials are expected to be performed at high profile hospitals, including the Hospital for Special Surgery in New York (conducts 500 surgeries every week), the Hoag Orthopedic Institute in Newport, CA, Mayo Clinic, Ortho Carolina and the Cleveland Clinic. The 505(b)(2) pathway allows the small nerve and the large nerve clinical studies to have the same exact clinical study trial design. These centers average more than a combined 1500 surgeries per week. 260 subjects will be needed for the first potential FDA product approval and 260 patients for the second product approval as well. PixarBio will not have to conduct Phase I studies since it is using FDA approved components for its drug delivery system, Carbamazepine and PLGA with known excellent safety profiles (non-toxic) and safety data. Both suppliers to PixarBio have US FDA Drug Master Files. Rapid clinical study turnaround is expected. Clinical post-op pain studies have low enrollment numbers of 20 subjects in a study arm and the studies are completed in 30 days and likely will be submitted to the FDA within 90 days of first patient enrollment. The combined Phase I and II Clinical studies will evaluate NeuroRelease against Bupivacaine and require 160 patients per study and consist of six arms with 20 patients in each arm (like Exparel's trials). The Key outcome to be measured is opiate reduction, pain scores through 14 post-op, sensory, motor function, and side effects observed for 30 days post-op will also be measured. Costs of the trial are fairly low; estimated at a $5 million in total for 520 patients.

160 Patients

Phase I + II: Safety, Pharmacodynamics, Dose Ranging, Efficacy (double blinded)		
Arms	**# of Patients**	**Outcomes**
Control (Saline)	20	1) Opiate reduction 2) ANA Pain Scores through Day 14 post-op 3) Sensory 4) Motor function 5) Side effects observed for 30 days post-op
Marcaine	20	
NR (Dose 1)	20	
NR (Dose 2)	20	
NR (Dose 3)	20	
NR (Dose 1) + Marcaine	20	
NR (Dose 2) + Marcaine	20	
NR (Dose 3) + Marcaine	20	

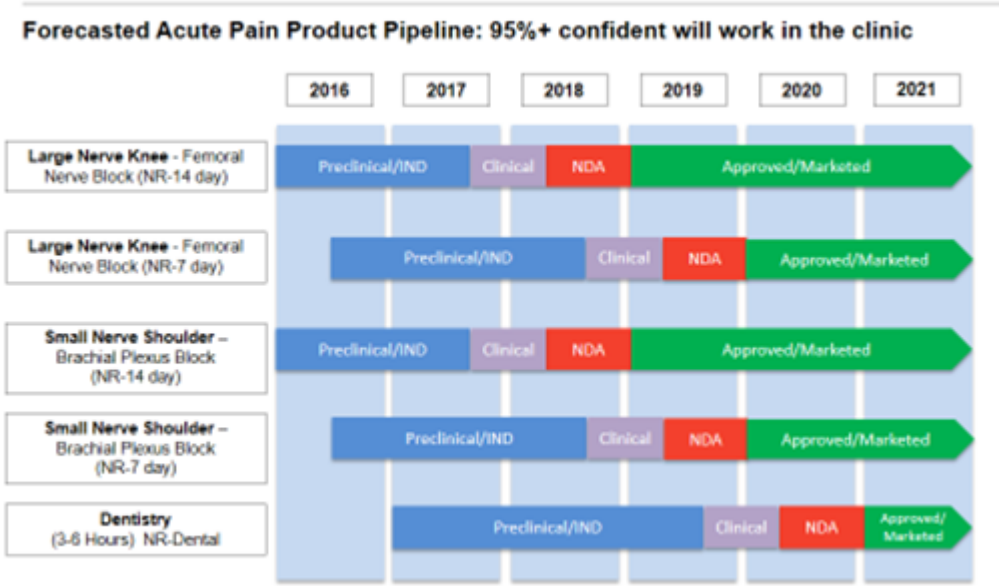
Shoulder/Knee Surgery--Small Nerve/Large Nerve Phase III Study

100 Patients

Phase III: Safety, Pharmacokinetics, Efficacy (double blinded)			
Arms	**Endpoint**	**# of Patients**	**Outcomes**
Control (Saline)	Safety / Efficacy	20	**Efficacy:** 1) Opiate reduction 2) ANA Pain Scores through Day 14 post-op 3) Sensory 4) Motor function **Pharmacokinetics:** 1) Blood plasma concentration 2) Half-life
Marcaine	Safety / Efficacy	20	
NR	Safety / Efficacy	20	
NR + Marcaine	Safety / Efficacy	20	
NR	Pharmacokinetics	20	

Phase III studies will consist of 100 subjects (patients) or 5 arms of 20 subjects per arm. Since the drug components have 50 years of safety data, large sample size numbers aren't required to attain statistical significance on the data. In addition, PixarBio's pre-clinical data is so reliable with 99.99999 reliability that large numbers of human subjects in each arm are not required by the FDA. Target efficacy outcomes are reduction in opiates, Pain scores through day 14 post-op, sensory, motor function, and in Pharmacokinetics, blood plasma concentration of the drug and half-life.

PixarBio expects FDA approval for 14-day therapy for both small nerve blockers and long nerve blockers in mid-late 2018. The company will also conduct clinical trials for 7-day administration for both small and large nerves. PixarBio intends to complete multiple clinical studies for multiple products virtually every year from 2018 onwards.



PixarBio intends to conduct future clinical trials to get FDA approval for chronic pain products, specifically for trigeminal neuralgia, sciatica, facet joint back pain, diabetic neuropathy and cancer associated pain, all are huge potential markets. An estimated 100 million Americans suffer with chronic pain compared to 25.8 million with diabetes, 16.3 million with coronary heart disease, 11.9 million with cancer and 7.0 million with stroke. The annual costs associated with treating chronic pain are extraordinary according to a recent Institute of Medicine Report: *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*, that estimated costs to society between $560 and $635 billion. Per capita, this finding is in line with a recent Canadian-based study that concluded the annual cost of treating chronic pain is between $47 and $60 billion, more than HIV, cancer and heart disease, combined.

PixarBio Sales and Marketing Led by Pacira Former VP Global Sales David Kaplan

The sales and marketing effort will be managed by David Kaplan, PixarBio's Chief Commercial Officer. From 2014 - May 2016, David was VP Global Sales at Pacira Pharmaceuticals the maker of Exparel. David was brought in to lead the Exparel product launch after a failed launch by his predecessor. He was responsible for hiring over 90% of Exparel's sales people and all the sales managers at Pacira. Exparel has 90% brand awareness, yet only has captured 3% of the market. 90% brand awareness normally means at least 30 percent market share. David left Pacira for PixarBio in May 2016 to join PixarBio because Exparel provided effective pain relief for up to 3 days without having to take opiates for only 28% of the patients; 72% of patients on Exparel required opiate rescue after 25 hours post-surgery (including David's own father's knee implant).

PixarBio plans to launch NeuroRelease into a market that is in great need of a true pain treatment that mitigates or eliminates the use of opiates and potentially reduces opiate addiction. Leveraging upon that experience, he plans to avoid the major mistakes made by Pacira. Kaplan also has extensive in-operating room selling experience that is very relevant to launching a product like this.

Kaplan intends to build an in-house sales team. A very large sales team is not required. A national sales manager will manage the national sales effort which will first concentrate on the larger hospitals and then work its way down to the smaller institutions. The country will be divided into nine sales teams. Each sales team will have a regional director and 6-10 post-surgical pain specialists, with an estimated 57 at launch (handling 10-20 major accounts).

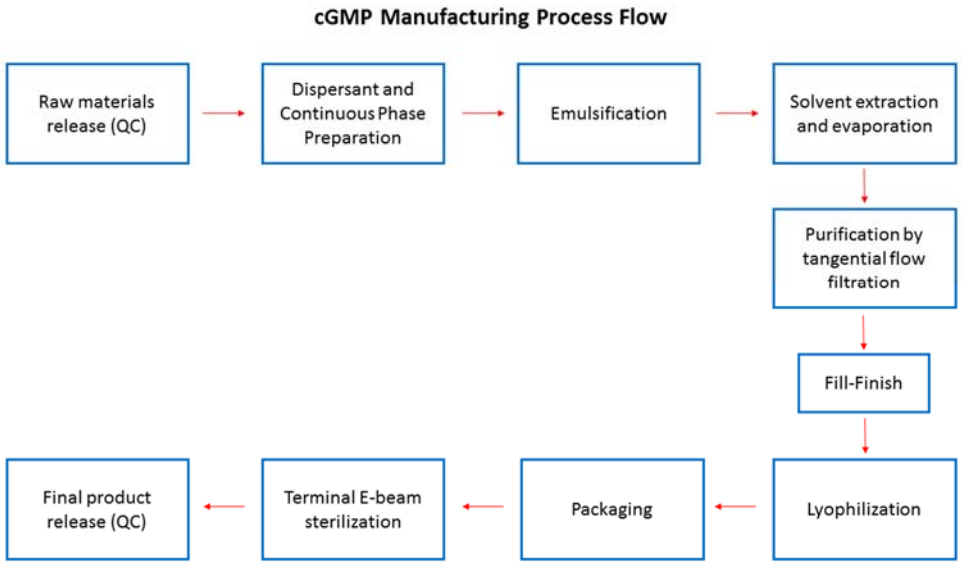
The company has assembled a clinical advisory team consisting of the top orthopedic surgeons and anesthesiologists in the country who are key opinion leaders at major hospitals who should be helpful in the expansion of the use of NeuroRelease once it is approved. NeuroRelease, unlike Exparel does not require physician education in learning the technique (it is already standard nerve block procedure), and should provide up to 14 days (or more) of post-surgical pain relief, without the need for opioids or significant reduction of opioid need. Thus, also less opioid addiction.

NeuroRelease will be launched by the company's experienced manufacturing management team that has a history of FDA regulatory approvals and also an extensive safety record in product manufacturing. PixarBio CEO Frank Reynolds has patented and led cGMP manufacturing for combination drug/polymer products for over a decade. The team has collectively commercially launched over 60 products, managing the whole spectrum from animal studies to human clinical studies, regulatory approvals to revenue generation.

PixarBio cGMP Manufacturing

PixarBio Corporation plans to bring a cGMP pilot production facility online (with a 400,000 unit capacity) in 2017 to support IND/NDA enabling studies for NeuroRelease (14 day), including the production of clinical lots to support clinical trials. The pilot facility will also be utilized to demonstrate the capability of manufacturing 10 times the initial batch size, produced during the first scale-up phase. This pilot production facility will be utilized to support the launch of NeuroRelease (14 day). Additionally, this pilot production facility will subsequently be similarly utilized for initial scale-up and pilot production of other NeuroRelease pipeline products (e.g. 3 day and 7 day).

Commercial production will be performed in a 100,000 ft2 facility. Based on the design of the commercial facility and 3 shifts of operation, the projected maximum capacity of this facility is 10,000,000 units/year. Bringing four of these commercial production facilities online should yield a projected capacity of 40,000,000 units/year to meet potential market demand. Pacira Exparel's manufacturing has been limited to under 1,000,000 units per year.



The final product will be shipped to the end user after final product release from the company's sterilization partner.

PixarBio Intellectual Property: PixarBio's Patent Picket Fence

The company seeks to protect the proprietary positions of its products by trade secrets, copyrights and the filing of U.S. and foreign patent applications related to proprietary technology, inventions, and product improvements. PixarBio's patents focus on protecting composition, methods of use, kinetics, and duration of efficacy. During 2013-2015, PixarBio filed more than 15 provisional and final patents for Parkinson's disease, epilepsy, spinal cord injury and pain. The company selectively chose to continue to file pain, epilepsy, and spinal cord injury patents while creating trade secrets for its Parkinson's disease treatments.

Bob Langer has more US Life science patents than anybody in history, trailing only Thomas Edison for numbers of US patents. PixarBio's founders have been co-inventing together for over a decade on more than 50 neurological patent applications.

Description of the patent disclosure for acute, post-operative, or chronic pain

Type of claim	Description of Claims
Composition	Fabrication methods
Composition	Biodegradable polymer or copolymer selection
Composition	Anticonvulsant selection
Composition	Control over particle size distribution
Composition	Control over anti-convulsant loading
Kinetics	Ability to release less than 60% of the anticonvulsant for times spanning 3 hours to 12 months
Duration of efficacy	Ability to maintain delivery of a therapeutically effective dose of the anticonvulsant for durations spanning 3 hours to 12 months
Methods of use	Utility in the treatment of a multitude of pain indications where peripheral nerve blocks are possible

The company's patent applications on various aspects related to its delivery technology falls into four areas: Post-operative non-opiate acute and chronic pain, spinal cord injury, Parkinson Disease Platform, and Epilepsy.

Management

The company has a strong and well-seasoned management team with a breadth of talent rarely seen in a junior bio-technology company.

Frank Reynolds – CEO, CFO, and Co-founder

Mr. Frank Reynolds has more than 15 years of management experience in healthcare and more than 30 years of executive management experience. Mr. Reynolds co-founded PixarBio Corporation after retiring from InVivo Therapeutics Corp (NVIV), a company he founded in 2005 and served as its Chairman of the Board, C.E.O, C.S.O, and C.F.O. until his retirement in August 2013. Prior to joining InVivo Corporation, Mr. Reynolds was the Director of Global Business Development at Siemens Corporation, where he was responsible for new business in over 100 countries. Previously he served as the founder and CEO of Expand The Knowledge, Inc. from 1997-2002.

In addition, he is a co-inventor on over 50 neurological biomaterials focused patent applications. His research has been published in the Journal of Biomaterials and the Journal of Neuroscience: Methods. As lead inventor on the NeuroScaffold, Mr. Reynolds led the team to become the first and only team to achieve functional recovery after a spinal cord injury in all three required models for FDA approval (rodents, non-human primates and humans). Mr. Reynolds was nominated for the

“2013 Boston Business Journal CFO of the Year”, and led InVivo Therapeutics to win the Boston Business Journal’s “2013 Best Places to Work in Boston”, a distinction PixarBio received again under his leadership in 2016. He was featured in the March 2010 and October 2009 issues of Inc. Magazine. He was awarded the 2010 Irish Life Science 50 Award by the President of Ireland, Mary McAleese. Mr. Reynolds won the American Spinal Injury Association’s “2011 David F Apple Award for Excellence in Publishing” in spinal cord injury rehabilitation research. Frank received the 2014 Irish Education 100 Award, and in March 2015 he received the 2015 IABCN “Taoiseach Award” or Prime Minister’s Award for Leadership, by the Irish Ambassador to the USA. He is an Executive Board Member of the Irish American Business Chamber and has served on the board of the Special Olympics of Massachusetts, and Wharton Consulting Partners. Mr. Reynolds is also a member of the American College of Healthcare Executives, an international professional society of healthcare executives who lead hospitals, healthcare systems and other healthcare organizations as well as a member of the American Psychological Association.

Mr. Reynolds suffered a paralyzing injury to his spine in December 1992. In the following months he began years of graduate school with formal training in Neuroscience, providing the foundation for his neuroscience expertise. He holds an MBA from MIT-Sloan Fellows Program in Global Innovation and Leadership from MIT; a Master’s of Science in Engineering from the University of Pennsylvania. He is an alumni of the Executive Masters of Technology Management, Wharton School of Business; a Master’s of Science in Management Information Systems from Temple University; a Master’s of Science in Health Administration from Saint Joseph’s University; and a Master’s of Science in Counseling Psychology from Chestnut Hill College. Mr. Reynolds earned a Bachelor of Science in Marketing from Rider University.

Dr. Robert S. Langer – Science Advisory Board Member and Co-Founder

Dr. Langer is the David H. Koch Institute Professor at MIT and, as only one of 14 Institute Professors, has received the highest honor that can be awarded to a faculty member. His major research focus is on cancer, materials science and chemical engineering. With a concentration on nanotechnology, Dr. Langer has been developing new nanoparticles to treat cancer and other diseases. Specifically, he is designing polymer, lipid, and polymer-lipid hybrid nano carriers for improved drug delivery, as well as similar controlled delivery systems for genetically engineered therapeutic proteins, DNA and RNA. Dr. Langer’s work also includes the creation of novel approaches for the engineering of new tissues and organs. Dr. Langer has authored more than 1,200 articles. Dr. Langer has more than 800 issued and pending worldwide patents making him second in history to Benjamin Franklin in number of awarded patents.

Dr. Langer served as a member of the FDA’s Science Board, its highest advisory board, from 1995-2002 and as its Chairman from 1999-2002. Dr. Langer is one of very few people ever elected to all three United States National Academies, and has received more than 220 major awards. Highlights include the U.S. National Medal of Science, the U.S. National Medal of Technology and Innovation, the Charles Stark Draper Prize (considered engineering’s Nobel Prize), the Millennium Technology Prize, the Albany Medical Center Prize, the Priestley Medal (the highest award of the American Chemical Society) the Wolf Prize in Chemistry, and the Gairdner Foundation International Award. Forbes (1999) and Bio World. Forbes (2002) selected Dr. Langer as one of the 15 innovators worldwide who will reinvent the future. Both TIME and CNN (2001) named Dr. Langer as one of the 100 most important people in America and one of the 18 top people in science or medicine in America. Dr. Langer earned a BS from Cornell University and a Sc.D. from the Massachusetts Institute of Technology both in chemical engineering, and holds 20 honorary doctorates.

Katrin Holzhaus – CAO, Director, and Co-founder

Ms. Holzhaus co-founded PixarBio Corp as Chief Operating Officer, leveraging her 20 years of experience in operations, corporate development, program management, entrepreneurship and communications. Ms. Holzhaus oversees the company's administrative and resource allocations including long- range financial planning and budgeting, finance, business and contractual services, research support, human resources, facilities planning and management, and management information systems Ms. Holzhaus has worked as an executive with PixarBio co-founder and CEO Frank Reynolds for almost 15 years in prior companies initially with Expand the Knowledge, InVivo Therapeutics Holdings Corp (NVIV), and now with PixarBio Corporation, Ms. Holzhaus brings complementary leadership skill sets to PixarBio's operations team, and a proven record of success. From 2004-2012, she was Director of Operations at Magnum Group, Inc., a leading global linguistic consulting company.

Ms. Holzhaus developed and led European Union-sponsored projects for women in decision-making and she was the founder of Future Proof Training and Consulting, a start-up company specializing in Human Resource Development. She has extensive international experience.

Katrin Holzhaus received her MBA and MS in Management Information Systems from Temple University, Philadelphia, Pennsylvania; and a Master of Arts from Leipzig University, Germany.

Jason Criscione, PhD – Chief Technology Officer and Co-founder

Dr. Criscione leads the discovery, development, GMP scale-up, and clinical translation of versatile drug delivery platforms designed to treat a myriad of neurological conditions, including acute, post-operative, and chronic pain. Dr. Criscione leverages his strong immunotherapy drug delivery and materials science experience to design, develop, and clinically translate biomaterials for sustained, local therapeutic intervention in neurological indications. Criscione was the winner of the "PixarBio Inventor of the Year". Dr. Criscione received his PhD in Biomedical Engineering from Yale University and his research lies at the interface of materials science, immunotherapy and medical imaging and is published in peer-reviewed, scientific journals, including, Nature Materials, Biomaterials, JACS and ACS Nano. He also holds a BA in Chemistry with a concentration in Neuroscience from Oberlin College, a MS in Physical Chemistry from Michigan State University, and a MS in Biomedical Engineering from Yale University.

Haining Dai – Director of Preclinical Neuroscience

Mr. Dai is an accomplished neuroscience researcher with over 30 years in industry and the Dept. of Neuroscience at Georgetown University. Mr. Dai has extensive experience in small animal surgery, behavioral training, testing, data collection and subsequent tissue processing for light microscopy (LM) histological analysis, and electron microscopic (EM) tissue preparation, sectioning, and stereological analysis. Dai has worked with Frank Reynolds since 2007, Mr. Dai and Mr. Reynolds led the core team of scientist conducting non-human primate studies while developing the NeuroScaffold. He was awarded the American Spinal Injury Association's "2011 David F. Apple Award for Excellence in Publishing" in spinal cord injury rehabilitation. He spearheaded the effort on the Capital Area Rehabilitation Research Network grant that encompasses many aspects of spinal cord injury and recovery of function in the animal and human models.

David Kaplan - Chief Commercial Officer

David Kaplan is responsible for the commercial marketing and sales strategy to bring NeuroRelease™ to market. David brings over two decades of experience, designing and running

nationally recognized hospital-based sales teams, focused in the areas of surgery, oncology and critical care. He has an extensive background bringing first-in class therapies from Phase III to product launch, working at such innovative companies as Corixa, PDL BioPharma and Pacira, the maker and marketer of Exparel. David has also held significant positions in the areas of corporate training, sales operations and marketing. David received his BS in Marketing from Arizona State University in Tempe.

Ken Stromsland - CIO/Investor Relations

Ken is responsible for PixarBio Corporation's overall strategy for enterprise information technology (IT), including business engagement, solution development and support, and infrastructure, while also supporting the company's strategy for drug discovery and development.

Ken has more than 20 years of experience as an innovative and transformative business leader in Financial Services., serving previously as a Managing Director at TD Ameritrade, multiple senior executive level roles at Citicorp, where he was recognized for several years in the company's high potential talent leadership program. He began his career in the Pharmaceutical industry with Johnson & Johnson, where he won Excellence awards for achieving efficiency advancements in the manufacturing process.

Ken has an MBA from the Wharton Business School and a B.A. from the Pennsylvania College of Engineering.

Steve Chartier - VP of Regulatory Affairs

Steve has over 20 years' industry experience developing Regulatory and Clinical programs that have resulted in more than 25 regulatory submissions and approvals of novel technologies. In Oncology, Wound Care, Autoimmune, Anti-Infective and Cardiovascular diseases. He has built and maintained Quality Systems worldwide. Prior to joining PixarBio, Steve spent time managing Regulatory, Quality, Manufacturing and Clinical departments at Biogen IDEC, Infraredx, and Nucryst Pharmaceuticals. He also worked in Program Management and Laboratory Research at Beth Israel Deaconess Medical Center and the Dana Farber Cancer Institute. Steve holds a BA in Psychology from Saint Anselm College, and earned his RAC certification from the Regulatory Affairs Professional Society.

Mary Phelan - CPA, Controller

Mary Phelan, CPA, joined the Company in January 2016 as Controller, with more than twenty years of accounting and reporting experience for primarily in the pharmaceutical and medical technology industries. She is an expert in the compilation of financial statements and has extensive experience in financial reporting, compliance with SEC, GAAP and SOX regulations, debt and equity financings as well as mergers and acquisitions. Ms. Phelan most recently served as Controller, Principal Accounting Officer and acting Principal Financial Officer for Mela Sciences in Irvington, NY, a publicly-held medical device company. Prior to that, Ms. Phelan worked as Controller and Principal Accounting Officer at Alteon Inc., a publicly traded biotechnology company specializing in cardiovascular diseases. Ms. Phelan began her CPA career in 1996 at KPMG LLP in Short Hills, NJ in their manufacturing, retail and distribution audit practice.

Scientific Advisory Board

Neal Mehta, MD

Dr. Mehta leads one of the largest pain centers in the United States. He is currently the Medical Director of Pain Medicine at the Weill-Cornell Pain Medicine Center, and New York Presbyterian Hospital, overseeing outpatient and inpatient services together with a large team of dedicated Pain and Regional Anesthesia Physicians. Dr. Mehta is both board-certified in Anesthesia, and fellowship trained, board certified in Interventional Pain Medicine. Dr. Mehta's goals are to optimize pain control, enhance functional ability as well as physical and psychological well-being, and quality of life. He focuses on, but is not limited to, musculoskeletal pain of the back, neck, and joints, neuropathic disorders, and cancer pain. His clinical interests lie in the minimally invasive procedures to treat musculoskeletal pain, including various types of injections, intrathecal pump therapy, Spinal Cord Stimulation, and the MILD(C) Procedure (Minimally Invasive Lumbar (Decompression) for Spinal Stenosis.

Brian Block, MD, PhD

Dr. Block is a Partner at Maryland Pain Specialists, PA. Dr. Block has also served as the President of Baltimore Spine Center. He is a specialist in treatment of chronic pain, using drug therapies and interventional techniques such as spinal cord stimulators, intrathecal drug pumps, epidural injections, and facet denervations. His interests include use of spinal cord stimulation and postoperative epidural analgesia as well as chronic pain syndromes such as spinal stenosis, degenerative disk disease, and cancer pain.

Steven Cohen, MD

Dr. Cohen is the Professor of Anesthesiology and Physical Medicine & Rehabilitation at the Johns Hopkins School of Medicine and the Uniformed Services University of the Health Sciences. He also serves as the Director of the Blaustein Pain Treatment Center at Johns Hopkins, and as the Director of Pain Research at Walter Reed National Military Medical Center. Over the last five years, he has been one of the most prolific pain researchers, authoring over 250 peer-reviewed articles in some of the most prestigious journals such as Lancet, BMJ, Annals of Internal Medicine, Archives of Internal Medicine, Cecil Textbook of Medicine, and New England Journal of Medicine. The sacroiliac joint RF denervation he pioneered is used all over the world. Dr. Cohen is perhaps the most respected authority on pain management for combat injuries, having lectured all over the world on the topic, and has even briefed cabinet-level officials throughout government.

Amitabh Gulati, MD

Dr. Gulati is an anesthesiologist and pain medicine physician practicing in New York City. He is Director of Chronic Pain, specializing in interventional cancer pain management, at Memorial Sloan Kettering Cancer Center. He received his medical degree from Baylor College of Medicine, completed his anesthesiology residency at Emory University School of Medicine, and obtained his pain management fellowship diploma from Weill Cornell School of Medicine in 2007. Dr. Gulati completed his acupuncture certification at the Helms Medical Institute in 2007, and is licensed to practice in the state of New York. He is a faculty member of the Weill Cornell pain management fellowship in New York City, as the Director of the Weill Cornell Pain Medicine Fellowship. He regularly gives lectures and teaches at workshops on topics involving ultrasound guided pain procedures, sympathetic blocks in cancer pain management, and non-invasive neuromodulation techniques. His current research involves the use of High Intensity Focused Ultrasound (HIFU) for the treatment of neuropathic pain and the use of both Platelet Rich Plasma and transcutaneous

electrical nerve stimulation (TENS) for pain management and functional improvement in the cancer pain population.

Amer Khalil, MD

Dr. Amer Khalil serves as Director of Spine Surgery and Assistant Professor of Neurological Surgery at the Department of Neurological Surgery at the University of California, Irvine. A Neurosurgeon with a specialty in complex and minimally invasive spine surgery, he completed his residency in Neurosurgery at Cleveland Clinic Foundation in Cleveland, then he completed a combined neurosurgery-orthopedic spine surgery fellowship at New England Baptist hospital in Boston, and a research fellowship in Spinal Cord Injury at InVivo Therapeutics in collaboration with Massachusetts Institute of Technology in Boston under the mentorship of Robert S. Langer, Sc.D. conducting preclinical trials of NeuroScaffolds implantation in injured spinal cord of rats that lead to first-in-human clinical trial. Dr. Khalil also held fellowship positions in Neurosurgery at Harvard affiliated hospitals, Boston Children's Hospital and Brigham and Women's Hospital in Boston, MA. He earned his Doctor of Medicine degree at University of Jordan Medical School in Amman, Jordan. Dr. Khalil is an active member of the American Association of Neurological Surgeons (AANS), Congress of Neurological Surgeons (CNS), AO Spine foundation and several other societies. Dr. Khalil has a keen interest in innovative therapies and technologies that can potentially improve patients' health.

Clinical Advisory Board

PixarBio has assembled a first class clinical advisory board, consisting of seven of the top 20 nationally recognized American Orthopedic Surgeons and Anesthesiologists specializing in the knee and hip.

James T. Caillouette, MD

Dr. Caillouette is a Board Certified Orthopedic Surgeon who specializes in Adult Reconstructive Surgery. He performs over 500 joint replacements and approximately 120 knee arthroscopies annually. He is Chairman of Newport Orthopedic Institute; a 25-physician group based in Newport Beach, California and was a founder of and was elected to serve as the founding Surgeon in Chief/Chief of Staff for Hoag Orthopedic Institute, a joint venture orthopedic specialty hospital that opened in 2010. He has served on the Board of Managers of the Institute since inception. He has been a member of the Board of Directors of the American Association of Hip and Knee Surgeons, the Western Orthopedic Association and is past President of the California Orthopedic Association, the largest state specialty society in the United States.

Dr. Caillouette has been involved in the research, design, development and commercialization of numerous orthopedic devices dating to 1989, including a novel ultrasonic cement removal system, two separate hip prostheses, software and instrumentation for Computer Assisted Knee Surgery, as well as the instrumentation and design for a next generation total knee system, the Attune, that was introduced and marketed globally by DePuy/Johnson&Johnson in 2013. He continues to work on new products for the Attune, and is also consulting for Conformis for a new hip replacement surgical method. He holds eleven US patents as co-inventor for biomedical products and methods and has two patents pending. Dr. Caillouette has served as an instructor of orthopedic surgeons in the US and internationally, and continues to teach surgical techniques in both hip and knee replacement regularly.

Dr. Caillouette has been involved in multiple entrepreneurial endeavors. He founded and raised the venture capital for Advanced Osseous Technologies in 1989 to develop an ultrasonic PMMA removal system and tools for revision total joint arthroplasty. This technology has become the

standard. After helping to guide the R&D, FDA approval, development of a manufacturing plant and sales ramp up, he subsequently sold the biotech company to Biomet in 1992. He remained a consultant to the company until 1995. He has been a designer surgeon and consultant to DePuy/J&J since 1996. In addition to health care, Dr. Caillouette has a passion for education. He graduated Phi Beta Kappa with a major in economics from Trinity College in Hartford, Connecticut, and has served as a Trustee at the primary, high school and college levels. He was a founder of Sage Hill School, Orange County's first independent nondenominational high school, and served as the founding Chairman of the Board of Trustees for the first seven years of the institution. He has been recognized by the California Orthopedic Association with The Founder's Award for innovation in healthcare delivery and was recently awarded the Alumni Achievement Award by Trinity College in 2014. In 2015 he was honored as the Joan and Andy Fimiano Endowed Chair in Orthopedic Surgery at Hoag Hospital-the institution's first chair in Orthopedic Surgery. His current area of focus is health care economics and re-designing orthopedic care delivery. He was recently elected by the Hoag Hospital Board of Trustees to serve as a founding board member of St. Joseph Hoag Health, an affiliation of 7 not for profit hospitals in Orange County and the High Desert with annual revenues of over $3 billion dollars. He has been actively involved in health care policy nationally, with particular focus on bundled and global payment initiatives and has co-written a monograph for the American Academy of Orthopedic Surgeons on the changing care delivery and payment models in the US in an effort to educate surgeons on the impact of macroeconomics on patient care in the US. In late 2014, Harvard Business School published a case study of Hoag Orthopedic Institute.

Dr. Caillouette's brief overview of bundled payment was published by The Journal of Arthroplasty in 2015. He was a founding faculty member along with Professors Kevin Bozic, James Weinstein, Michael Porter and others of the annual "Volume to Value" national seminar for the American Academy of Orthopedic Surgeons. He is a founding member of the Executive Committee of the California Joint Replacement Registry, serves as an advisor to the Osteoarthritis collaborative of the International Consortium of Health Outcome Measures founded by Harvard Business School and The Karolinska Institute and was recently added to the founding board of directors of the National Orthopedic and Spine Alliance along with the leaders of The Cleveland Clinic, The Rothman Institute, OrthoCarolina and CORE. This combination of exposure and responsibility in Healthcare, as well as formal training in economics, creates a unique informed perspective on healthcare innovation and care delivery.

Mark Pagnano, MD

Dr. Mark Pagnano is Professor and Chair of the Orthopedic Division at Mayo Clinic in Rochester, Minnesota. He has a special focus on knee and hip replacements. He currently serves on the board of directors of The Knee Society and is a member of the American Academy of Orthopaedic Surgeons. In addition to his clinical practice, Dr. Pagnano has conducted research on knee-related topics and has over 100 publications in professional journals, such as the Journal of Bone & Joint Surgery. Dr. Pagnano earned his medical degree at George Washington University School of Medicine in Washington, D.C., and completed his residency in orthopedic surgery at Mayo Clinic. His additional training includes a fellowship in knee reconstruction at Insall-Scott-Kelly Institute for Orthopaedics and Sports Medicine, based in New York City.

Douglas Padgett, MD

Dr. Douglas Padgett is the Chief of the Adult Reconstruction and Joint Replacement Service at Hospital for Special Surgery in New York City. Dr. Padgett is dedicated to exploring the cutting edge of medicine for his patients. While clinical outcomes and biomaterials research have been his main focus, two fields of current interest are robotic surgery and deep vein thrombosis.

He has authored over 90 research papers and co-authored the medical text book, “Atlas of Total Hip Replacement”. Dr. Padgett has received numerous awards and accolades. Among them, he has received the Philip D. Wilson Research award three times for innovative clinical and translational research. He is a recipient if the Otto Aufranc Award for Outstanding Research from the Hip Society as well as the Outstanding Research Poster Award from the American Association of Hip and Knee Surgeons. He has been named Educator of the year given by the fellows at Hospital For Special Surgery as well as receiving designation as a Best Doctor and Super Doctor in New York the past 5 years. He has been the Harris Keynote speaker at Harvard Medical School, the Badgley Visiting Professor at the University of Michigan and was recently named the Chitranjan S. Ranawat Chair in Adult Reconstruction at Hospital for Special Surgery. Dr. Padgett was a resident in orthopedic surgery at Hospital for Special Surgery and subsequently performed a one-year postdoctoral fellowship at The Rush Presbyterian Medical Center in Chicago in Adult Reconstructive Surgery of the hip and knee.

Scott M. Sporer, MD

Dr. Sporer is an Associate professor at Rush University Medical Center and specializes in hip, knee, and joint replacement. He has special interests in primary and revision arthroplasty surgery, including the anterior approach to hip replacement, and minimally invasive techniques.

A medical graduate from the University of Iowa College of Medicine, Iowa City, Iowa, Dr. Sporer completed his residencies at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire, and Connecticut Children’s Medical Center in Hartford. In addition, he served as an adult reconstruction fellow at Rush University Medical Center in Chicago. He is Board Certified to the American Board of Orthopedic Surgery. Dr. Sporer is currently on the board of directors for The American Joint Replacement Registry and the American Association of Hip and Knee Surgeons. His areas of research include long-term follow-up studies of the hip, complications associated with total knee replacement, and the regional variation in medicine.

Bryan Springer, MD

Dr. Bryan Springer is the Fellowship Director at OrthoCarolina Hip & Knee Center in Charlotte. His practice focuses on primary and revision total hip and knee replacement. In addition to his clinical research that has resulted in over 75 peer-reviewed publications and over 20 book chapters, Dr. Springer has received numerous awards including recently named by Orthopedics This Week as one of the Top 22 North American Knee Surgeons. He is a member of the prestigious Knee Society and Hip Society as well as President of the Musculoskeletal Infection Society. He completed the John Insall traveling fellowship in 2008. Dr. Springer is also on the Board of Directors for the American Joint Replacement Registry as well as the Board of Directors for the American Association of Hip and Knee Surgeons (AAHKS) where he serves as Education Chair. He is on the editorial boards for four scientific journals, including the Journal of Arthroplasty, Clinical Orthopedics and Related Research, Journal American Academy of Orthopedic Surgeons, and Journal of Knee Surgery. Dr. Springer completed his Orthopedic Surgery Residency at Mayo Clinic in Rochester, MN and his Adult Reconstruction of the Hip and Knee Fellowship at Harvard School of Medicine, Brigham & Women’s Hospital.

Gregory Hickman, MD

Dr. Hickman is an anesthesiologist and Medical Director of the Andrews Institute Ambulatory Surgery Center, an affiliated of the Andrews Institute for Orthopedics & Sports Medicine in Gulf Breeze, FL. His clinical interests include ultrasound guided regional anesthesia for post-operative analgesia and post-operative pain management. Dr. Hickman is Board-certified in Anesthesiology

and Pain Medicine. Dr. Hickman is co-founder of the popular ultrasound-guided regional anesthesia education website, www.blockjocks.com. From his role at the Andrews Institute as well as through his nationwide speaking/consulting work, Dr. Hickman conveys a broad understanding of regional anesthesia issues in diverse practice settings.

Brandon Winchester, MD

Dr. Winchester is the regional anesthesia fellowship director at the Andrews Institute for Orthopedics & Sports Medicine. In Dr. Winchester's previously served as Assistant Professor of Anesthesiology at both Duke University Medical Center and the University of North Carolina. Following his education, he took on a transitional intern role at Boston University Medical Center and later finished a residency in anesthesiology at both Massachusetts General Hospital and Duke University Medical Center. Dr. Winchester is co-founder of the popular ultrasound-guided regional anesthesia education website, www.blockjocks.com. Through social media, international speaking engagements and at The USRA Skills Course, Dr. Winchester is acclaimed for his ability to impart his knowledge of nerve block skills.

Kris J. Alden, MD

Dr. Kris Alden is a fellowship-trained, board-certified orthopedic surgeon who specializes in hip and knee replacement. Dr. Alden was part of the exclusive MD/PhD program at the University of Illinois at Chicago, where he was awarded the Kate and Michael Barany award for research and scholarship. Following medical school, Dr. Alden trained in all aspects of orthopedic surgery at the prestigious John Hopkins Hospital. He sub-specialized in hip and knee reconstruction at the Mayo Clinic where, as a fellow-in training, where he worked with some of the top surgeons in the country.

Dr. Alden was a 4-time NCAA All-American inductee, NCAA National Champion, 4-time University Athletic Association Champion, and varsity and conference record holder and was inducted into the University Athletic Hall of Fame in 2005.

His work has been published in numerous peer-reviewed journals and he has authored multiple book chapters related to orthopedic surgery. As a practicing surgeon, Dr. Alden has lectured on and trained other surgeons in novel and complex joint reconstruction techniques across the United States, as well as North America and Europe. Dr. Alden focuses his current practice on lower extremity reconstruction, including primary joint replacement, complex joint revision, limb salvage, and knee osteotomy procedures. He specializes in direct anterior hip replacement surgery, knee replacements, revision surgeries, and other lower extremity complex joint replacement procedures. He currently practices with a group of surgeons in his community, Hinsdale Orthopedic Associates that draws patients from all over the Chicagoland area.

Michael Meneghini, MD

Michael Meneghini is an Associate Clinical Professor and Director of Adult Lower Extremity Fellowship in the Department of Orthopedic Surgery at Indiana University School of Medicine. Dr. Meneghini's orthopedic practice is specialized to adult hip and knee reconstruction, which includes total hip and knee replacement, complex revision hip and knee replacement, uni-compartmental or partial knee replacement and minimally invasive surgical techniques. He has authored over 70 research papers and is on faculty for numerous teaching programs nationwide on hip and knee replacement. In addition to being a member of the prestigious Knee and Hip Society, Dr. Meneghini is the sole recipient of the Indiana University School of Medicine Early Career Achievement Award presented to alumnus within 15years of graduation in honor of distinguished career achievement in medical profession. He was also named in 2014 by Orthopedics This Week, "Top 22 Knee Surgeons in North America" and in 2013, Orthopedics Today awarded him, "Top 40 Leaders in Joint

Replacement: Generation Next" .Dr. Meneghini completed his Orthopedic Surgery Residency at Rush University Medical Center in Chicago and his Hip and Knee Replacement Fellowship at the Mayo Clinic in Rochester, Minnesota.

John Camp, MD

Dr. John Camp is the Chairman of the Department of Anesthesiology at Carolinas Medical Center, one of the top five largest hospital systems in the nation. Dr. Camp has significant experience in regional anesthesia, managing one of the largest regional anesthesia programs in the nation. He has well over thirty publications and presentations focused in the areas of pain management and continues to be a guest lecturer at universities and medical centers throughout the nation. Dr. Camp consults with numerous companies in advancing the field of pain management and regional anesthesia. Dr. Camp received his medical degree from Jefferson Medical College in Philadelphia, Pennsylvania and completed his anesthesiology residency at Wilford Hall Medical Center in San Antonio, Texas.

Moeed Azam, MD

Dr. Azam is a shareholder physician at US Anesthesia Partners, the nation's leading provider of Anesthesiology and pain management services with more than 2,000 clinicians serving healthcare facilities in Florida, Texas and Colorado. He serves on the national Clinical Quality Committee and IT committee. Dr. Azam has served on the Clinical Governance Board and the Board of Directors of JLR Medical Group, a 200 clinician practice covering the Florida Hospital System. His responsibilities included business development/M&A, marketing, and an operational focus. From a clinical operations perspective he has in depth involvement of several strategic initiatives including: blood management, regional anesthesia, and IT.

Dr. Azam developed corporate collaborations with several industry partners for education, training, and research. Dr. Azam joined JLR Medical Group after completing his anesthesiology residency training at The Johns Hopkins Hospital and a medical internship at University of Miami's Jackson Memorial Hospital. He has served as the Director and Chief of Liver Transplant Anesthesiology since the program's inception at Florida Hospital over a decade ago. Dr. Azam also serves as the Chief of Anesthesiology for Physicians' Surgical Care Center with specialized skill in regional anesthesia procedures for ambulatory surgical patients of the Jewett Orthopedic Clinic. He has facilitated in program development for the fully outpatient total joint replacement program.

Dr. Azam graduated from Rutgers University – New Jersey Medical School. He is board certified in Anesthesiology and an Assistant Professor at the University Of Central Florida College Of Medicine.

Anthony G. Sanzone, MD

Dr. Sanzone is a Fellow of the American Academy of Orthopedic Surgery and is board certified by the American Academy of Orthopedic Surgeons. He received his undergraduate degree from the University of California San Diego and continued his orthopedic education at Boston University where he completed his residency. Dr. Sanzone specialized in orthopedic traumatology by completing a fellowship at the University of Washington at Harborview Medical Center.

Currently in private practice in San Diego and Chula Vista (Eastlake area), Dr. Sanzone maintains an academic relationship with UCSD Medical School and is a staff member of the Department of Orthopaedics. Dr. Sanzone is the co-founder of San Diego Orthopedic Trauma Fellowship and actively instructs a fellow on the discipline of fracture care. He is a member of the Orthopaedic

Trauma Association, California Orthopaedic Association and Western Orthopaedic Association. He is on staff at hospitals throughout San Diego County.

James Mueller, MD

Dr. James Mueller is a private practice anesthesiologist affiliated with Medical City Dallas Hospital in Dallas, TX. He is board certified in anesthesiology with significant training and lecturing in regional anesthesia throughout the nation. He received his medical degree from Medical University of South Carolina College of Medicine. He completed his fellowship at Medical College of Virginia Hospital. Dr. Mueller is a national speaker for various companies in the areas anesthesia and postsurgical pain.

Ajay Suman, MD

Dr. Ajay Suman was born and raised in Houston, TX and currently resides in New York City. He is board certified by the American Board of Anesthesiology in Anesthesiology and Pain Medicine.

Dr. Suman currently is the Medical Director of Pain Management at St. Barnabas Hospital in the Bronx, NY. His experience stems from his intense fellowship training at Texas Tech University's Pain Management Department. After completion of his fellowship, Dr. Suman was then recruited to Tripler Army Medical Center, where he helped create the interdisciplinary pain department, working with active duty soldiers being air evacuated directly from Afghanistan and Iraq. He has had extensive experience treating patients ranging from chronic lower back pain to severe neuropathic pain syndromes from the trauma of war with Spinal Cord Stimulation. Dr. Suman worked in Capitol Hill on Healthcare Policy through Boston Scientific's Healthcare Policy Fellowship, served as the Hawaii State President of ASIPP, as well as implemented a successful business plan to create a profitable department at his current hospital.

Reimbursement

PixarBio's' commercial success is dependent upon its ability to ultimately obtain reimbursement from the government's health administration authorities, private health insurers and other health provider organizations. Upon FDA approval for NeuroRelease, the company will apply for reimbursement. Considering the substantial need for an effective longer-term non-opiate treatment for Rebound Pain and the substantial advantages of NeuroRelease over Exparel, PixarBio should command an equivalent reimbursement of $316.50. But, in light of NeuroRelease's low cost the company could charge a lower price and remain quite profitable.

Revenues and Earnings

For the second quarter ended June 30, 2016 PixarBio reported a loss of $2,905,739 or a loss of nine cents per share on 32,769,975 shares versus a loss of $1,167,498 or a loss of seven cents per share on 16,000,000 shares outstanding. The company devoted $1.77 million on R&D versus $762,229 in the 2015 second quarter.

For the six months period ended June 30, 2016 the company generated losses of $5,406,320 or a loss of $0.16 per share on 32,873,450 shares out versus a loss of $2,122,977 or a loss of 13 cents per share on 16,000,000 shares. The company devoted $3,478,034 on R&D versus $1,482,875 in the like 2015 period. G&A jumped from $1,482,875 to $3,478,034. For the full 2016 year, we estimate an operating loss of nearly $18 million, R&D expenditures of $10.4 million, and a bottom line loss of about $18 million or a loss of $0.23 per share per share on 79.4 million shares, or a loss of $0.18 per fully diluted share (97.5 million shares). For 2017, we estimate G&A expenses of about

$10.1 million, R&D expense of $25.3 million, total operating expenses of $36.6 million, and a bottom line loss of $36.6 million or a loss of $0.38 per share fully-diluted. With FDA approval expected in 2018, management projects $80 million in sales, gross margins of 54%, R&D expenses of $8.8 million, total operating expenses of $75.4 million, putting the bottom line loss at of $8.2 million or a loss of $0.08 per share. For 2020, we expect the company to be solidly in the black, with earnings of $39.5 million or $0.41 per share on $180 million revenues. Revenues for 2023 should surpass $900 million with profits after-tax of $405 million, not including any additional FDA drug approvals.

PixarBio Corporation
Projected Income Statement FYE Dec 31
(In $ Thousands Except Percentages)

	2016	2017	2018	2019	2020	2021
Sales				80,000	180,000	400,000
Net Revenue				**80,000**	**180,000**	**400,000**
COGS				12,800	28,800	64,000
Gross Profit				**67,200**	**151,200**	**336,000**
Gross Profit Margin				84.00%	84.00%	84.00%
Operating Expenses						
R& D Facilities	5,638	12,356	19,433	14,527	13,588	9,533
R&D	4,788	12,944	14,468	24,269	29,678	33,733
Total R&D	**10,426**	**25,300**	**33,901**	**38,796**	**43,266**	**43,266**
Professional Fees	1,525	1,184	1,544	1,699	1,784	1,834
SG&A	6,013	10,117	15,282	34,905	45,278	54,674
Total Operating Expenses	17,964	36,601	50,727	75,400	90,328	99,774
Operating Profit (EBIT)	**-17,964**	**-36,601**	**-50,727**	**-8,200**	**60,872**	**236,226**
Operating Profit Margin				-10.30%	33.80%	59.10%
Non-Operating Expenses						
Interest Expense						
Earnings Before Taxes	**-17,964**	**-36,601**	**-50727**	**-8,200**	**60,872**	**236,226**
Provision for Taxes					21,305	82,679
Tax Rate					35%	35%
Net Income	**-17,964**	**-36,601**	**-50,727**	**-8,200**	**39,567**	**153,547**
Net Profit Margin				-10.30%	22.00%	38.40%
E.P.S	-0.23	-0.38	-0.52	-0.08	0.41	1.58

Assumptions

- Sales Forecast only include NeuroRelease 14 day treatment revenue to begin in 2019
- No revenue is forecasted for spinal cord injury or epilepsy products
- Price Point: PixarBio current reimbursement rate of Exparel which is $316.50/vial
- Forecasted units sold is conservative, based on the only market comparable, Exparel, which was slowly adopted due to a wide range of issues that PixarBio expects to avoid
- PixarBio expects Gross Margin to exceed 80%
- PixarBio expects Net Profit margin to exceed 40%
- First sales revenue are forecasted for early 2019, with a logical market adoption rate

Dividends

As a bio-tech company we do not expect the company to pay any dividends in the foreseeable future. The company believes that shareholders will best be served by plowing back future earnings into the company to grow the business.

Financial Position

As of June 30, 2016, the Company had current assets of $737,735 with current liabilities of $2,179,644 putting the current ratio at a weak 0.34:1.0. However $500,000 of current liabilities consists of convertible debt and $149,682 in current capital leases. There is no long term debt outstanding. The company had about $504,418 in cash at the end of the 2016 second quarter. Total assets were $2,316,430. There are 69,252,425 shares outstanding. PixarBio recently underwent a 2.066 for 1 stock split. Frank Reynolds, the company's CEO owns 62.9% of the stock and has invested about $10 million in the company since its inception. Bob Langer, co-founder and head of the scientific advisory board owns 16.0% of the stock and other investors hold 21.1%. There are currently 12.8 million stock options outstanding with an average exercise price of $1.45, and 5.3 million in restricted shares issued, leaving 6.9 million shares available in the equity pool. Since inception, the company has raised a total of $13.5 million in cash.

The company is currently raising $20-$30 million via a private placement consisting of one common share and a 7 year (callable) warrant with a $4.50 exercise price to be used to fund clinical studies, acquire facilities, machinery and additional personnel to scale up and build out processes and cGMP production facilities. Reynolds has invested over $1M in this round and over 50% of PixarBio employees are also investors. Fifty per-cent of the warrants are callable at $7, and the stock needs to be at least at $7 for 20 consecutive days. 100% of the warrants are callable when the stock hits $20 and the price stays at least at $20 for 20 consecutive days. Assuming sale of all shares being offered in the current private placement, there will be 97,500,000 shares outstanding on a fully diluted basis. The company should not have to go back to the market to raise additional equity, if the warrants are exercised, which could provide cash from $45 million to $67.5 million (depending if the minimum or maximum of the current offering is completed). The company's current monthly burn rate is $675,000, and management estimates cash burn of $2.115 million for the 2016 fourth quarter. There are a total of 40 employees; 6 in executive management, a controller, 2 in the commercial area and 31 in R&D.

The company intends to shortly become a publicly traded entity, via a reverse merger and trade under the ticker XXX on the Bulletin Board in the beginning of October 2016.

Risks

PixarBio is subject to all of the usual risks associated with a junior biotechnology company including regulatory risk, dependence on a small management and scientific team, market risk, competition, and risk of not raising adequate capital among others. It's currently privately-held but expects to be trading shortly; stock is subject to the risks associated with low-priced equities trading on the NASDAQ BB markets, including potential lack of liquidity.

Our price target: $10 within the next 18-24 months. This target could prove conservative if Phase II results show opioid patient use reduction levels over 14 days significantly above Exparel's 18% level (over three days).

Sheldon S. Traube

Director of Research