



NeuroRelease Pain: 4-8 Hours, 3-Days, 7-Days, 14-Days, 90-Days Board of Directors Meeting November 2016 Stock Symbol: PXRB

www.pixarbio.com

## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com

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## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com



"If we go to doctors right now and say 'Don't overprescribe' without providing some mechanisms 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," – President Obama

#### CDC Guideline for Prescribing Opioids for Chronic Pain – United States, 2016

Recommendations and Reports / March 18, 2016 / 65(1);1-49

"Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed .... Three days or less will often be sufficient; more than seven days will rarely be needed ... **Experts noted that more than a few days of exposure to opioids significantly increases hazards**, that each day of unnecessary opioid use increases likelihood of physical dependence without adding benefit..."



New Hampshire Sens. Kelly Ayotte (R-N.H.) (L) and Jeanne Shaheen (D-N.H.) (R) are major backers of opioid abuse legislation passed by the Senate on Monday.

Senate passes bill to combat heroin, painkiller abuse



The Washington Post

### www.pixarbio.com Non-Opiate, Non-Addictive Pain Relief

### **Defeating Rebound Pain** – EXPAREL & Std of Care Nerve Blocks Exacerbate Problem

### <u>92,000,000+</u> Annual Surgeries in USA; <u>42,000,000+</u> have more than 3 days Post-op Pain

Day 0: Procedure	Post Op: 1-24 Hours	Post Op: Days 2 - 3
EXPAREL	Rebound Pain	Rebound Pain Worsens
	15 Hrs. Median Time to Rescue Opioids	72% Require Opioid Rescue by 25 Hrs. Post Op
Nerve Block*	Rebound Pa	in Rebound Pain Worsens
*Single Shot NB	0-8 Hours: Less F 8-16 Hours: <b>No Di</b> 16-24 Hours: Wors	Pain fference 25+ Hours = No Difference se Pain
		TM Loots Comment

**Rebound Pain=** Sudden onset of pain after Bupivacaine/Exparel suddenly stops working

### **Exparel Surgical Patients**

- 74% report moderate to extreme pain after discharge
- 99% discharged with opioid prescription
- 44% taking prescription within one week of surgery > chance of longterm use



# PixarBio Clinic Based Addiction Problem:

**Eliminating Addiction from the clinic- Defeat Rebound Pain!** 

NeuroRelease<sup>TM</sup> represents the only non-opiate product to take on rebound pain

### 2016 Current Non-Opioid/Non-Opiates Options or Under Review by the FDA

Supplier	Product Name Bupivacaine Has Neurotoxic issues	Active Pharmaceutical Ingredient	Product Development Status	Efficacious Duration	FDA Approval Expected
Generic	Marcaine	Bupivacaine	Approved/Market	Up to 8-24 hours	On The Market
Generic	Bupivacaine/ Ropivacaine	Bupivacaine/ Ropivacaine	Approved/Market	Up to 8-18 hours	On The Market
Pacira	Exparel NB	Bupivacaine	Approved/Market	Up to 1-3 days	2018
Heron	HTX-011	Bupivacaine/Meloxicam	Phase II	Up to 4 days	2018
Durect	Posimir	Bupivacaine	Phase I	Up to 2-3 days	2018
PixarBio	NeuroRelease	Carbamazepine	Pre-Clinical 505B2	14 Days 7 Days 3-Days 90 Days	2018 2019 2020 2020

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#### Other non-opiate options for management of post-op pain

"Cocktails" and multimodal approaches

NSAIDs (e.g. lbuprofen)

Anti-epileptics (e.g. Lyrica)

Exparel "Local Anesthetic Systemic Toxicity Jun 2016

Shoulder Surgery Animation (Small Nerve Fiber Clinical Study)

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NeuroRelease<sup>™</sup> blocks nociceptive and neuropathic pain signals arising from temperature and pressure stimuli without affecting motor function



**Total Knee Arthroplasty Animation** (Large Nerve Fiber Clinical Study)

www.pixarbio.com

NeuroRelease<sup>™</sup> blocks nociceptive and neuropathic pain signals arising from temperature and pressure stimuli without affecting motor function



## PixarBio NeuroRelease: Material Properties www.pixarbio.com

### We control particle size, drug payload and release rate



### Five 9's Reliability on 3 Day, 7 Day and 14 Day Pain Treatments

Preclinical Efficacy Study: Sciatic Nerve Block Comparison with Exparel



Chronic constriction injury of the sciatic nerve is gold standard and most widely cited model



Time (days)



Statistical significance determined by unpaired, parametric t-test reported and further confirmed by one-way ANOVA (All p-values less than <0.0001)

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## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com

In-House Vivarium Maximizes R&D and Product Iterations Led by Neuroscience Director with almost 30 years of Pre-clinical neurological Vivarium work.



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-2018 Real World Competition

#### NeuroRelease<sup>™</sup> vs. Exparel (Liposomal bupivacaine – FDA approved 72-hours post-op soft tissue pain)

Material Characteristic	NeuroRelease	Exparel
Nerve block impacts motor		✓
Nerve block impacts sensory	$\checkmark$	$\checkmark$
Rate of release – controlled and tunable	$\checkmark$	
Ability to release for >1 week	✓	
Diffusion-based release kinetics	$\checkmark$	$\checkmark$
Degradation-based release kinetics	✓	
Biodegradable (no residual)	$\checkmark$	
Clearance by biodegradation	✓	
Clearance by reticuloendothelial system (RES)	$\checkmark$	$\checkmark$
Stability	✓	
Cold Chain shipping and storage		$\checkmark$
Stored as a powder at room temperature	✓	
No changes to standard of care	$\checkmark$	
Rapid onset of efficacy	$\checkmark$	

### FDA Study Face-Off: NeuroRelease vs. Bupivacaine

Material Characteristic	NeuroRelease	Bupivacaine
Sodium channel blockade	$\checkmark$	$\checkmark$
Membrane potential stabilization	✓	
Potency	High	Low
Inherent neurotoxicity		✓
Inherent myotoxicity		$\checkmark$
Nerve block impacts motor- effect Walking and moving		✓
Nerve block impacts discriminative touch		$\checkmark$
Nerve block impacts sensory	$\checkmark$	$\checkmark$
Nerve block impacts proprioception		$\checkmark$
Nerve block selectively inhibits nociception	✓	
Duration and magnitude of block is controllable and tunable	$\checkmark$	
Nerve block duration	14 days	8-18 Hours

## PixarBio NeuroRelease: Regulatory Timelines www.pixarbio.com

### Forecasted Acute Pain Product Pipeline: 95%+ confident will work in the clinic





\* PixarBio filed for Orphan Designation of NeuroRelease<sup>™</sup> 90-day to treat Trigeminal Neuralgia in 2015

## PixarBio NeuroRelease: cGMP Manufacturing

### **PixarBio cGMP Clean Room Manufacturing Process Flow**



### 2017 Clinical Study Design – Combined Phase I & II Small Nerve Fiber Study Post-Operative Shoulder Pain

#### **160** Patients

Brachial Plexus Block with NeuroRelease for Post-Operative Pain: Shoulder Surgery

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

### 2017 Clinical Study Design – Phase III Small Nerve Fiber Post-Operative Shoulder Pain 100 Patients

**PixarBio** 

#### Brachial Plexus Block with NeuroRelease for Post-Operative Pain: Shoulder Surgery

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

**NeuroRelease: Clinical Studies** 

### 2017 Clinical Study Design – Combined Phase I & II Large Nerve Fiber Study Post-Operative Knee Pain 160 Patients

Femoral and Distal Sciatic Nerve Block with NeuroRelease for Post-Operative Pain: Total Knee Arthroplasty

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

\*Note: Injection 1 refers to the injection administered to the femoral nerve Injection 2 refers to the injection administered to the distal sciatic nerve

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## 2017 Clinical Study Design – Phase III Large Nerve FiberPost-Operative Knee Pain100 Patients

**PixarBio** 

Femoral and Distal Sciatic Nerve Block with NeuroRelease for Post-Operative Pain: Total Knee Arthroplasty

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

\*Note: Injection 1 refers to the injection administered to the femoral nerve Injection 2 refers to the injection administered to the distal sciatic nerve

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### "Picket Fence" Patents

- Provisional Patent Application Filed in 2014 with patent expiration beginning in 2034
- Nonprovisional US and Patent Cooperation Treaty (PCT) applications filed in 2015
- Additional provisional patent applications filed in 2016 to expand pain portfolio

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 anticonvulsant 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					

## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com

### Top 15 Hospital Surgeries: Non-Opiate Post-Op Opportunities: \$2.18 Billion Annually

TOP 15 NON-OPIOID, NON-ADDICTIVE POST-OP	% Responders want								
<b>OPPORTUNITIES - PROCEDURES/SURGERIES</b>	<u>a Non-Opioid</u>	<u>3-day</u>	<u>14-day</u>	<b>Total Procedures</b>	<u>Total</u>	Dollarized	<u>14</u>	14-Day Dollarized	
	<u>A</u>	B	<u>C</u>	<u>D</u>		<u>E</u>		<u>F</u>	
Anesthesia-nerve blocks/injections (Knee)	95%	30%	35%	4,502,370	\$ 1,4	425,000,105	\$	473,812,535	
Anesthesia-nerve blocks/injections (Shoulder)	95%	33%	33%	2,251,185	\$ 7	712,500,053	\$	225,625,017	
Spine Surgery	81%	0%	100%	1,189,624	\$ 3	376,515,996	\$	304,977,957	
Fracture Repair	80%	0%	82%	995,000	\$ 3	314,917,500	\$	207,475,059	
Anesthesia-nerve blocks/injections (Hip)	85%	40%	33%	2,251,185	\$ 7	712,500,053	\$	201,875,015	
Knee Replacement	90%	0%	73%	929,000	\$ 2	294,028,500	\$	194,058,810	
C-Section Delivery	90%	20%	40%	1,300,000	\$ 4	411,450,000	\$	148,122,000	
Injection-paravertebral facet joint-w/wo ultrasound	60%	27%	40%	1,026,856	\$ 3	324,999,924	\$	77,999,982	
Shoulder Arthroscopy	65%	7%	53%	708,000	\$ 2	224,082,000	\$	77,681,760	
Hip Replacement, Total	80%	0%	71%	332,000	\$1	105,078,000	\$	60,044,571	
Hysterectomy	90%	11%	44%	400,000	\$1	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	
			$\sim$						
Averages/Total Dollars	81%	12%	57%	16,961,468	\$    5,3	368,304,622	\$	2,179,748,417	

...On average, over 80% of clinicians desire a morphine strength, non-addictive post-surgical pain treatment (Column A), of which nearly 60% prefer a 14-day timeframe for such a pain treatment (Column C)

...On average, only 12% of the same clinicians prefer a 3-day timeframe for such a pain treatment (Column B)

...For 11 of the Top 15 surgeries/procedures, the 3-Day timeframe was preferred at a percentage of 20% or less, **7** surgeries/procedures at **0% preferred** (Column C)

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## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com

### **PixarBio 10 Year Financial Forecast**

#### **Assumptions:**

- Prime Focus on Large Nerve Block and Small Nerve Block thru the FDA
- In-house GMP Manufacturing for 2 products in Clinical studies in 2017
- NeuroRelease Portfolio Expansion- 7-Days, 3- Days, and 90-days in pipeline
- 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
- 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
- PixarBio will employ over 500 people by the end of 2019

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Revenues	<b>\$</b> -	\$ -	\$ -	\$80	\$180	\$400	\$600	\$900	\$1,233	\$1,688
COGS	\$ -	<b>\$</b> -	<b>\$</b> -	\$13	\$29	\$64	\$96	\$144	\$197	\$270
EBITA	(\$18)	(\$37)	(\$51)	(\$8)	\$61	\$236	\$387	\$625	\$889	\$1,253
Net Income	(\$18)	(\$37)	(\$51)	(\$8)	\$40	\$154	\$252	\$406	\$578	\$814

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in millions

### PixarBio Non-Opiate, Non-Addictive Pain Relief

#### **Financial Overview**

- Current monthly cash burn of \$727k
- Q1 2017E cash burn of \$2.115mm
- \$35.0mm Needed to FDA Approval

#### **Use of Proceeds**

- Conduct Clinical Studies for 2018 Approval
- Acquire facilities, machinery, and additional personnel to scale-up and build out processes and cGMP production capabilities

#### Ownership as of October 31, 2016

Name	Ownership %
Frank Reynolds	61.27%
Bob Langer	15.12%
Other Investors	23.61%
Total	100.0%

#### Personnel

Function	# of Employees
Executives	6
Controller	1
Commercial	1
Research & Development	24
Total	32

### **PixarBio** Leadership Team

#### www.pixarbio.com



#### Frank Reynolds, CEO, CSO, CFO

- Co-invented The NeuroScaffold, led invention from concept to the clinic
- Founded InVivo Therapeutics Corp (NVIV) COB, CEO & CFO until his retirement in Aug 2013. Took NVIV public in 2010. \$520mm Mkt. Cap. in 2013
- 2013 & 2016 Best Company to work for Boston- BBJ
- 2013 CFO of Year BBJ, nominee
- Co-inventor on 50+ patent applications
- 2011 David F Apple Award for SCI research
- MIT-Sloan; Wharton School. Penn Engr., HBS, St Joe's, Temple U, CHC, Rider U, Univ. Hong Kong S&T David Kaplan, Chief Commercial Officer
- 20 years experience designing and running nationally recognized hospital-based sales teams focused in the areas of surgery, oncology and critical care.
- Extensive background bringing first-in-class therapies from Phase III to product launch, working at such innovative companies as Corixa, PDL BioPharma, Pacira.
- Former VP of Sales at Pacira Pharmaceuticals
- BS in Marketing from Arizona State University

#### Ken Stromsland, CIO/Investor Relations

- 20+ years experience as business leader in Financial Services – EVP at Citi, Managing Dir at TD Ameritrade
- Engineer at Johnson & Johnson
- MSE Wharton School, U Penn Engineering

#### Mary Phelan, CPA, Controller



- 20 years accounting & reporting experience in compliance w/ SEC, GAAP, SOX regulations in pharma & medical technology industries
- Extensive experience in financial reporting, debt and equity financings, M&A
- Most recently Controller, Principal Accounting Officer & acting Principal Financial Officer, Mela Sciences (NASDAQ)
- Controller & Principal Accounting Officer at Alteon Inc.
- KPMG LLP manufacturing, retail & distribution audit practice





#### Jason Criscione, PhD

#### **Chief Technology Officer & Co-Founder**

- **Co-Inventor of NeuroRelease System**
- "2014 & 2015 PixarBio "Colnventor of the Year"
- Expert in biomaterials design and fabrication
- Expert in polymeric particles, gels, immunotherapy
- Hypercube Scholar Award for Excellence in Chemistry **Experienced Preclinical Translation**

#### Steven Chartier, VP Regulatory Affairs

- 25+ regulatory submissions & approvals of novel drugs & devices in Oncology, Wound Care, Autoimmune, Anti-Infective & Cardiovascular diseases.
- Expert in building worldwide compliant Quality Systems
- Managed Regulatory, Quality, Manufacturing & Clinical departments at Biogen IDEC, Infraredx, Nucryst Pharma
- Program Management & Lab Research at Beth Israel Deaconess Medical Cntr & Dana Farber Cancer Institute.
- BA in Psychology, Saint Anselm College; RAC certification

#### Michael Lovett. PhD: Director. R&D

- 6+ yrs experience developing drug delivery formulation
- Prior research on applying biomaterials technology and formulation techniques to develop sustained release formulations of chronically administered therapeutics.
- PhD in biomedical engineering from Tufts University
- Bachelor's in chemical engineering from Univ. of Mass. Amherst
- Co-authored 15 papers in peer-reviewed journals and has several patent applications related to sustained drug delivery and his doctoral research on silk-based vascular grafts and tissue constructs.

#### Katrin Holzhaus, CAO & Co-Founder

- 16 years working with CEO Frank Reynolds initially at Expand the Knowledge, then with InVivo Therapeutics Holdings Corp (NVIV), brings complimentary leadership skillsets to PXRB's operations team & proven record of success.
- Leads PXRB Facilities and HR activities
- MBA and MS in MIS from Temple University, Master of Arts from Leipzig University, Germany.





- - Yale PhD in Biomedical Engineering.





### **Scientific Advisory Board**



#### **Robert S. Langer, ScD**

- David H. Koch Institute Professor at MIT
- 1,200+ articles, 800+ issued and pending patents worldwide.
- Served as a member of the FDA's Science Board 1995-2002 and as its Chairman from 1999-2002.
- 220+ major awards incl. the U.S. National Medal of Science, the U.S. National Medal of Technology and Innovation, Charles Stark Draper Prize (considered engineering's Nobel Prize), Priestley Medal (the highest award of the American Chemical Society)

#### Amitabh Gulati, MD

- **Director, Ambulatory Pain Management at Memorial Sloan Kettering Cancer Center**
- Board certified in anesthesiology and pain medicine
- MD, Baylor College of Medicine
- Fellowship at NewYork-Presbyterian Hospital/Weill Cornell Medical Center; Memorial **Sloan Kettering Cancer Center**

#### Steven Cohen, MD



- **Management Consultant to the Surgeon**  Professor of Anesthesiology & Critical Care Medicine at the Johns Hopkins School of
- Medicine; Professor at the Uniformed Services University of Health Sciences in Bethesda, MD.
- Director of Medical Education and Quality Improvement for the Pain Management Division at Johns Hopkins



#### Medical Director of Pain Medicine at the Weill-**Cornell Pain Medicine Center, and New York Presbyterian Hospital**

Neel Mehta, MD

- Board-certified in Anesthesia & Interventional Pain Medicine
- focuses on musculoskeletal pain of the back, neck, joints, neuropathic disorders, cancer pain.
- Fellowship in Interventional Pain Medicine in the Tri-Institutional Pain Medicine Fellowship at New York Presbyterian-Weill Cornell Medical Center, Hospital for Special Surgery and Memorial-Sloan **Kettering Cancer Center**
- Medical Degree in 2005 from Tufts University School of Medicine in Boston, MA

#### Brian Block, MD, PhD

- Partner at Pain Medicine Specialists, PA
- President at Baltimore Spine Center. He is a specialist in treatment of chronic pain.
- PhD and MD from Case Western Reserve University School of Medicine in Cleveland, OH.
- Fellowship in Pain Management at Johns Hopkins. Joined faculty at Johns Hopkins working in the Blaustein Pain Center
- Engineering Degree from University of Michigan in Ann Arbor.

#### Amer Khalil, MD

- Chief Spine Surgery UC Irvine
- Neurosurgery Spine Fellow at New England **Baptist Hospital, Boston, MA**
- Resident in Neurosurgery, Cleveland Clinic Foundation, Cleveland, OH
- Research Fellowship in Spinal Cord Injury, NVIV
- MD from University of Jordan Medical School



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## PixarBio Clinical Advisory Board: Ortho www.pixarbio.com



#### Bryan Springer, MD

- Knee Society & Hip Society
- 2014 Emerging Leader AAHKS
- Generation Next: Top 40 Leaders in Joint Replacement
- Authored over 75 orthopedic publications
- Fellowship Director, OrthoCarolina Hip & Knee Center
- Fellowship: Adult Reconstruction of the Hip and Knee at Harvard School of Medicine
- Residency: Mayo Clinic, Department of Orthopedic Surgery, Rochester, MN



#### Douglas Padgett, MD

- Knee Society & Hip Society
- Chief of Adult Reconstruction and Joint Replacement Division & Chief Emeritus of the Hip Service, Hospital for Special Surgery
- Authored over 100 orthopedic publications
- Focus on clinical outcomes, biomaterials research, robotic surgery & deep vein thrombosis prevention
- Fellowship: Rush Presbyterian Medical Center, Adult Reconstructive Surgery of the Hip and Knee, Chicago, Illinois
- Residency: Hospital for Special Surgery, Orthopedic Surgery, New York



#### Michael Meneghini, MD

- Knee Society & Hip Society
- Generation Next: Top 40 Leaders in Joint Replacement
- Associate Professor and Director of Adult Extremity Fellowship: Department of Orthopedic Surgery, Indiana University School of Medicine
- Specializes in adult hip and knee reconstruction
- Authored over 70 orthopedic research papers
- Fellowship: Hip and Knee at Mayo Clinic, Rochester, MN
- Residency: Orthopedic Surgery at Rush University Medical Center, Chicago, IL



#### Scott Sporer, MD

- Hip Society
- Assoc. Professor at Rush University Medical Center
- Board of Directors for The American Joint Replacement Registry and the American Association of Hip and Knee Surgeons
- Authored over 80 orthopedic publications
- Residency: Dartmouth Hitchcock Medical Center in Lebanon, NH & Connecticut Children's Medical Center in Hartford
- Fellowship: Adult Orthopedic Reconstruction at Rush University Medical Center, Chicago, IL

## PixarBio Clinical Advisory Board: Ortho www.pixarbio.com



#### James Caillouette, MD

- Chief of Staff, Hoag Orthopedic Institute in Newport Beach, CA
- Chairman of the Newport Orthopedic Institute, a 20-physician group practice.
- Involved in the research, design, development and commercialization of numerous orthopedic devices
- Holds 11- US patents as co-inventor for biomedical products and methods
- Fellowship: Orthopedic Joint Reconstruction, University of California, Irvine
- Residency: Orthopedic Surgery, University of California, Irvine



#### Anthony Sanzone, MD

- Trauma Orthopedic Surgeon, Chula Vista & San Diego, CA
- Fellow of the Am. Academy of Orthopedic Surgery
- Co-founder of San Diego Orthopedic Trauma Fellowship
- Authored over 20 orthopedic publications
- Fellowship: Orthopedic Traumatology, Harborview Medical Center/Univ. of Washington Seattle, WA
- Residency: Orthopedic Surgery, Boston University Medical Center Boston, MA
- Residency: General Surgery, Chicago Medical School



#### Kris Alden, MD, PhD

- Board-Certified Orthopedic Surgeon specializing in Hip, Knee, & Shoulder Reconstruction
- Focuses on lower extremity reconstruction, incl. primary joint replacement, complex joint revision, limb salvage, knee osteotomy
- Fellowship: Lower Extremity Joint Reconstruction, Mayo Clinic, Rochester, MN
- Residency: Orthopedic Surgery, Johns Hopkins University
- MD/PhD, University of Illinois College of Medicine, Chicago



#### Mark Pagnano, MD

- Professor & Chair of Orthopedic Division at Mayo Clinic in Rochester, MN
- Focus on knee & hip replacements
- Member of Board of Directors of The Knee Society and of the American Academy of Orthopaedic Surgeons
- Published in Journal of Bone & Joint Surgery
- MD from George Washington University School of Medicine in Washington, D.C.
- Residency in orthopedic surgery at Mayo Clinic.
- Fellowship in knee reconstruction at Insall-Scott-Kelly Institute for Orthopaedics and Sports Medicine, NYC

### **PixarBio** Clinical Advisory Board: RA www.pixarbio.com

#### **Gregory Hickman, MD**

- Anesthesiologist & Medical Director of the Andrews Institute Ambulatory Surgery Center, affiliated with the Andrews Institute for Orthopedics & Sports Medicine Gulf Breeze, FL
- Clinical interests in ultrasound guided regional anesthesia for post-operative analgesia and post-operative pain management
- Board-certified in Anesthesiology & Pain Medicine
- Co-founder of ultrasound-guided regional anesthesia education website, www.blockjocks.com



#### Moeed Azam, MD

- Chief of Anesthesiology for Physicians' Surgical Care Center with specialized skill in regional anesthesia procedures for ambulatory surgical patients of the **Jewett Orthopedic Clinic**
- Shareholder physician at US Anesthesia Partners, the nation's leading provider of anesthesiology & pain management services with 2,000+ clinicians serving healthcare facilities in FL, TX, CO
- Served on Clinical Governance Board and Board of Directors of JLR Medical Group, a 200 clinician practice covering the Florida Hospital System
- Served as Director and Chief of Liver Transplant Anesthesiology at Florida Hospital
- Anesthesiology residency training at The Johns Hopkins Hospital; medical internship at University of Miami's Jackson Memorial Hospital

#### James Mueller, MD

- Anesthesiologist affiliated with Medical City Dallas Hospital, Dallas, TX
- Board certified, specializing in Anesthesiology
- In practice for more than 25 years
- MD from Medical University of South Carolina College of Medicine
- Fellowship at Medical College of Virginia Hospital



#### **Brandon Winchester, MD**

- Regional anesthesia fellowship director at the Andrews Institute for **Orthopedics & Sports Medicine.**
- Served as Assistant Professor of Anesthesiology at Duke University Medical Center & University of North Carolina
- Intern at Boston University Medical Center
- Residency in anesthesiology at Mass General Hospital & Duke University Medical Center
- Co-founder of ultrasound-guided regional anesthesia education website, www.blockjocks.com



### **Clinical Advisory Board**



#### <u>John Camp, MD</u>

- Chairman of the Department of Anesthesiology at Carolinas Medical Center, one of the top five largest hospital systems in the nation.
- Significant experience in regional anesthesia, managing one of the largest regional anesthesia programs in the nation.
- 30+ publications and presentations focused on pain management
- MD from Jefferson Medical College Philadelphia, PA
- Anesthesiology residency at Wilford Hall Medical Center in San Antonio, TX



#### Ajay Suman, MD

- Medical Director of Pain Management at St. Barnabas Hospital in the Bronx, NY.
- Intense fellowship training at Texas Tech University's Pain Management Department
- Board-certified by the American Board of Anesthesiology in Anesthesiology and Pain Medicine.
- In previous roles at Tripler Army Medical Center, he helped create the interdisciplinary pain department, working with active duty soldiers being air evacuated directly from Afghanistan and Iraq.
- Extensive experience treating patients ranging from chronic lower back pain to severe neuropathic pain syndromes from the trauma of war with Spinal Cord Stimulation.
- Worked on Capitol Hill on Healthcare Policy through Boston Scientific's Healthcare Policy Fellowship
- Served as the Hawaii State President of ASIPP

# **PixarBio** Board of Directors

### www.pixarbio.com





- Founded InVivo Therapeutics Corp (NVIV) Chairman of Board, CEO and CFO until his retirement in Aug 2013. Took NVIV public in 2010. \$520mm Mkt. Cap. in 2013
- 2013 & 2016 Best Company to work for BBJ
- Co-inventor on 50+ patent applications
- 2011 David F Apple Award for SCI research
- MIT-Sloan; Wharton School. Penn Engr., HBS, St Joe's, Temple U, CHC, Rider U

#### Katrin Holzhaus, CAO & Board Member

- 20+ years of experience as entrepreneur & leader in operations, development, global marketing.
- Worked w cofounder Frank Reynolds for 15+ years initially at Expand the Knowledge, then with InVivo Therapeutics Holdings Corp (NVIV); brings complimentary leadership skillsets to PixarBio's operations team and a proven record of success.
- MBA and MS in MIS -Temple University, MA Leipzig University, Germany.

#### Laura B. Morse, Independent Board Member

- Founder, Entrepreneurship Ventures, a start-up consulting & coaching practice
- Former Human Capital Partner at Atlas Venture, largest transatlantic early stage technology VC firm
- Specializes in human capital strategies including recruitment, development, reward systems
- S.W.I.F.T. sc Brussels, global financial telecom consortium, led worldwide recruiting & expatriate svcs
- Frequent speaker around Europe, Solvay (Belgium), Harvard Business School, and MIT/Sloan.



#### David Cass, Independent Board Member Chief Information Security Officer Cloud & SaaS Operational Services at IBM

- Global responsibility for all aspects of security practices, processes, and policies across IBM Cloud SaaS
- Former Elsevier SVP & Chief Information Security Officer leading global legal, risk and security team providing data protection, privacy, security, & risk management guidance
- As Sr Director of Information Security Risk and Governance for Freddie Mac, rebuilt the risk and governance function
- As VP of Risk Management for JPMorgan Chase, was responsible for providing assessment of risk management state, contributing to future direction of risk management, continuity & disaster recovery.
- MSE from U of Pennsylvania; MBA from MIT.

#### Derek Bridges, Independent Board Member; President & CEO of Next Level Alignment

- Extensive experience with regulatory filing, bidding and reimbursement with the Centers for Medicare and Medicaid (CMS) & Patient Protection and Affordable Care Act (PPACA).
- Served as a senior executive for Anthem, Aetna and Delta Dental, developing growth strategies to double revenue/profitability in \$100MM - \$1B+ organizations.
- MBA from U of Kansas; MSE in Technology Management from U of Pennsylvania's Wharton School





## PixarBio Non-Opiate: Non Addictive Pain Relief www.pixarbio.com

# Thank You and Contact

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