

last updated 10/11/2023

## **SUMMARY TOTALS**

Clinical: 78 Translational: 20 Basic Science: 6		Basic Science: 65	
AAU and Federal Studies: 10			
Grand Total: 163 Studies			

## **CLINICAL STUDIES**

#	Project Title	Description	PI	Sponsor
1.	Stryker ADM Acetabular System	To evaluate and determine the success rate, defined as absence of	Aggarwal	Stryker Orthopaedics
	Clinical Trial	postoperative femoral head dislocation, at 10 years with the		
		Restoration ADM X3 Acetabular System.		
2.	Stryker Triathlon Cone TKA	The primary objective is to evaluate the success rate of the Triathlon	Aggarwal	Stryker Orthopaedics
	Revision Study	Tritanium Cone Augments with the Triathlon TS Total Knee System		
		at 2 years postoperative, defined as absence of revision of the Femoral		
		Cone Augment or Tibial Cone Augment for aseptic loosening when		
		compared against published results for other revision knee systems.		
3.	Biomarkers for Osteoarthritis	The purpose of this study is to investigate the changes which occur in	Keeney	DOS
		diseased knee tissue and to compare these findings to other patients of		
		the same age.		
4.	ATTUNE	The primary objective of this clinical investigation is to evaluate	Keeney	Depuy Synthes
		functional		
		responder rates with objective performance criteria of participants		
_		implanted with the ATTUNE device.		
5.	SDOH for OA	To identify relationships for social determinants of health with the	Keeney, Leary	DOS
		sequence of treatment options that tend to not be offered to patients		
		who have been diagnosed with osteoarthritis of the knee		
6.	Serum and Urine Biomarkers to	Identify serum and urine biomarkers that correlate and potentially	Stoker, Keeney,	TLRO
	Predict Radiographic Osteoarthritis	predict radiographic severity of disease for assistance in disease	C Cook	
	Severity	staging and guidance of clinical treatment.		
7.	Does patient medication use affect	Identify the relationship between patient medication use and the	Stoker, Keeney,	TLRO, DOS
	patient biomarkers levels in OA	concentration of biomarkers in various fluids	C Cook	
	patients			
8.	Mizzou Musculoskeletal	The purpose of the biorepository is to formalize our current	Cook	DOS
	Biorepository	infrastructure and mechanisms for collecting, storing, and analyzing		
		samples (tissues, fluids) for musculoskeletal research.		

#	Project Title	Description	PI	Sponsor
9.	Outcomes in Patient IQ	Data analytics platform that will be used by our orthopaedic surgeons	Smith, Cook	DOS
		and researchers to evaluate surgical procedures, improve standard of care, facilitate patient recovery, and future research		
10.	Mizzou BioJoint Lifelong Registry	Clinical outcomes registry for all BioJoint patients (knee, hip, ankle.	Cook	DOS
100	Study	shoulder).		200
11.	Outcomes of Low-Impact Exercise	To study how low-impact group exercise classes affect pain scores in	Cook	DOS
	Program for People With Ankle,	patients with knee, hip, and ankle pain.		
	Knee, and/or Hip Pain or Who Are			
12	Eresh Meniscal Allograft versus	This study seeks to look at natients that have undergone labral	Crist	DOS
12.	Frozen Tendon Graft for Labral	reconstruction using either fresh meniscal allograft or frozen tendon	Clist	000
	Repair in the Hip	allograft, and compare patient reported outcomes, diagnostic imaging		
		assessments, and hip range of motion measures in a head-to-head		
		comparison of these two graft options.		
13.	Biomarkers in Orthopaedics	Clinical outcomes study that looks at biomarkers in blood, urine, and	Stannard	DOS
14	Illtracound Evaluation of Manigool	synovial fluid in patients with various MSK conditions.	Stannard	DOG
14.	Transplantation (MAT)	for patients receiving either frozen or fresh meniscus transplants to	Stannard	DOS
		determine meniscal extrusion.		
15.	OTA Ankle Fx PROs	Using an approach which combines the patient and surgeon	Schweser, Leary	DOS
		perspectives to identify a uniform consensus-driven, patient-centered		
		outcome recommendation for use with ankle fractures.		
16.	VBT AI	Using statistical or machine learning methods to predict surgical	Boeyer, Leary	DOS
		outcomes to optimize patients for VBT surgery and long term		
17	Antibiotics in Dedictric Ontherneedie	functional outcomes.	Cueta	DOG
17.	Percutaneous Surgery (APOPS)	A prospective, randomized study to evaluate in antibiotics affect the outcome after percutaneous surgery for pediatric supracondylar	Gupta	DOS
	refetituteous burgery (m or b)	humerus fractures.		
18.	AO PedORTHO Registry	A prospective multicenter observational registry of pediatric	Gupta	AO
		orthopedic	-	
		trauma and health outcomes in skeletally immature children		
19.	Open-Label Long-Term Extension	This is an open-label, phase 3 extension study, to further evaluate the	Hoernschemeyer	BioMarin
	Study to Evaluate the Safety and	efficacy and safety of BMN 111 until subjects either reach near-final adult beight or for 5 years if near final adult beight ecours prior to the		Pharmaceuticals Inc.
	with Achondroplasia	end of the 5-year period		
20.	A Multi-center, Longitudinal.	The purpose of this study is to observe and study the growth velocity.	Hoernschemever	Ascendis Pharma
	Observational Study of Children	body proportionality, and		
	with Achondroplasia	complications (comorbidities) in children with achondroplasia.		
21.	A Phase 2, Multicenter, Double-	The purpose of this trial is to determine the safety of once weekly	Hoernschemeyer	Ascendis Pharma
	Blind, Randomized, Placebo-	doses of TransCon CNP in prepubertal children with achondroplasia.		

#	Project Title	Description	PI	Sponsor
	Controlled Trial Evaluating			
	TransCon CNP in Prepubertal			
	Children with Achondroplasia			
22.	Harms Study Group	Evaluate the efficacy of non-fusion surgical treatment of Spinal	Hoernschemeyer	Harms Study Group
		Deformity Correction in Idiopathic Scoliosis.		
23.	BPAQ Activitiy Outcomes	Longitdinal tracking of preoperative and postoperative outcomes in	Boeyer	None
		adolescent idiopathic scoliosis patients treat with Vertebral Body		
		Tethering		
24.	Pediatric Scoliosis Registry	This is a single center registry for all patients who are being seen	Boeyer	None
		and/or treated for scoliosis at all pediatric ages. This includes all forms		
		of scoliosis. The primary goal is to track longitudinal outcomes for all		
		Standard of Care measures.	2	NT.
25.	sterEOS in VBT	Identify postoperative changes in vertebral and intervertebral rotation	Boeyer	None
		of instrumented and non-instrumented vertebrae in patients treated		
26	NI LOI	with Vertebral Body Tethering.	D	NT
26.	Pleural Closure	Determine the influence of pleural closure on perioperative and	Boeyer	None
		postoperative outcomes in patients treated with Vertebral Body		
27		lethering.	D	N
27.	5+ Year VB1 Outcomes	Assess mid-term outcomes in patients treated with VB1.	Boeyer	None
28.	TIGER PROTOCOL	Determine the influence of a HGER Protocol (None vs. V1 vs. V2) on	Boeyer	None
20		perioperative outcomes following Vertebral Body Tethering	D	7' D' /
29.	Zimmer Growth and Maturation	Evaluate postoperative changes in growth and skeletal maturation in	Boeyer,	Zimmer Biomet
20		Factories treated with a vertebral Body Tether.	Roemschemeyer	News
30.	Harms Lenke 2As	Evaluate postoperative changes in the compensatory upper thoracic deformity in Lonko 2A notion to treated with Vertahral Body Tethering	Boeyer,	None
31	TOPS	Multicenter clinicial trial to assess the effects of diet and everying on	Cook	NILI
51.	1013	prevention of knee osteoarthritis in middle-aged women	COOK	19111
32	Testing Batteries for Pre-	Determine the impact of short versus standard length behavioral	Cook	TIRO
52.	Osteochondral Allograft Surgery	testing batteries on outcomes following OCA	COOK	TERO
	Optimization	testing batteries on batefiles following OCA		
33.	Biomarkers for Human Hip	The purpose of this study is to evaluate the biomarkers present in	Cook	DOS
	Dysplasia	individuals with hip dysplasia and/or secondary hip osteoarthritis and	COOK	DOD
	2 J 2 J 2 P 1 1 2 1 1	compare the levels to patients without hip dysplasia and/or secondary		
		hip osteoarthritis.		
34.	Patients' Perceptions of Success	Explore and compare patients' subjective perceptions of success and	Hoernschemeyer,	Zimmer
	after VBT and Spinal Fusion	satisfaction three or more years after anterior vertebral body tethering	Royse	
	-	or posterior spinal fusion.		
35.	Machine Learning for OA	Using machine learning methods to better understand mechanisms and	Leary	DOS
	-	progression of osteoarthritis.		

#	Project Title	Description	PI	Sponsor
36.	COVID-19 STAReD	to deploy the sensor system in the homes of rural community-dwelling older adults with disabilities and evaluate the effect of the sensor	Proffitt	NIH
		system on reducing disability and improving health-related quality of		
		life.		
37.	PARTNORS	The patient advisor team works directly with researchers to	Royse	PCORI
		collaboratively design research questions for comparative		
		effectiveness of biologic vs. artificial surgical treatment options for		
20	Qualitativa Study Evalarias	complex knee problems.	Ducinalti	Condon Followshin
30.	Definitions and Experiences of	the healthcare team with the goal of creating a model of patient	Rucifiski	Gordon renowsnip
	Adherence in Orthonaedics	adherence.		
39.	Mixed Methods for PTOA	Characterize PTOA development to develop a risk classification tool	Stannard, Learv,	DOS
		for early-onset PTOA.	Royse	
40.	TOPS biomarker study	a prospective longitudinal analysis of serum and urine biomarkers for	Stoker, Leary	DOS
		characterization of knee OA disease progression, delineation of		
		response to preventative intervention, and determination of functional		
41			0.11.4	TIDO
41.	characterization of biological effect	Evaluate synovial fluid, serum, and urine biomarker concentration and	Sullentrup	ILKO
	OA	corticosteroid injection		
42.	Mental healthcare in BioJoint	How the addition of a behavioral health psychologist to the OCA care	Williams	TLRO
	Patients	team impacts functional patient outcomes		12110
43.	Biomarkers for Intervertebral Disc	The overall goal of our research is to comprehensively characterize	Choma	DOS
	Degeneration	pathology of the degenerative disc disease and to optimize diagnosis,		
		treatment, and clinical outcomes.		
44.	Anterior Short-Segment Fusion	The purpose of this project is to gather clinical and radiographic data	Choma	DOS
	Outcomes	to gain important clinical insight on the long-term outcomes of		
		patients who underwent anterior short segment instrumented fusion for		
45.	Intraoperative Epidural Steroid	The aim of this study is to develop a grading scale for intraoperative	Moore	DOS
	Administration Following	assessment of nerve root inflammation to determine if this subjective		200
	Discectomy	assessment is an adequate indicator for response to epidural steroids		
		following discectomy.		
46.	Hip Resilience	This study is designed to be a prospective, longitudinal registry that	Defroda	DOS
		will measure patient resilience using the validated CD-RISC 10		
		questionnaire, along with patient reported outcome (PRO) measures		
17	DTS	To electronically conture and integrate notions functional macauree	Leon	DOS
4/.	K15	from PT to clinical utilization without patient handling	Leary	005
		I nom i i to chinear utilization without patient handling		

#	Project Title	Description	PI	Sponsor
48.	ACL Injury In Vitro	Scientific research on ACL injury and healing through laboratory analysis of tissue.	Ma	DOS
49.	CartiHeal RCT for Focal Cartilage	Randomized clinical trial to compare clinical outcomes for Agili-C vs.	Ma	CartiHeal
	Defects in the Knee	surgical standard of care (SSOC) for treatment of focal cartilage		
50	CALVESO	defects in the knee.	Ma	Maximad
50.	CALIFSO	Knee System when used in subjects with symptomatic osteoarthritis of	Ivia	Woximed
		the medial compartment of the knee.		
51.	NOVOCART® 3D	The purpose of this clinical study is to demonstrate the superior	Ma	Aesculap Biologics,
		efficacy of the NOVOCART® 3D autologous chondrocyte		LLC
		transplantation system compared to Microfracture in the treatment of		
		articular cartilage defects of the knee in patients who have had		
		inadequate response to		
52	ACL Resilience	This study is designed to be a prospective longitudinal registry that	Nuelle Clay	DOS
52.	ACL Resilience	will measure patient resilience using the validated CD-RISC 10	ruene, ciay	000
		questionnaire, along with patient reported outcome (PRO) measures		
		collected at preoperative and postoperative intervals.		
53.	Synovial Fluid Analysis Following	To analyze synovial fluid from the knee after ACL injury and at the	Stannard	DOS
	ACL Injury	time of ACL reconstruction or repair surgery, to characterize the		
		nature of the joint environment with respect to inflammatory and		
54		degradative processes in order to determine optimal timing of surgery.	Ctown and	Demonstration
54.	The STak That	surgery (early vs. delayed) and timing of post-op rehabilitation (early	Stannard	Department of
		vs. delayed) for the treatment natients that have sustained a Multi-		Derense
		Ligament Knee Injury		
55.	SEC PCL	The goals of this study are to determine a population-based incidence	Stannard	DOS
		of isolated PCL injury and isolated MCL injury and how these injuries		
		compare to all ligament injuries, compare the performance of and		
		occurrence of secondary meniscal tears with PCL injury to patients		
		without PCL injury, and evaluate ability of patients with isolated PCL		
56	Intranasal Calcitonin to Improve	The nurnose of this study is to see if the hormone calcitonin is better at	Crist	AOTrauma North
50.	Pain and Activity in Elderly Pelvic	treating pain in elderly people with pelvic fractures than the routine	Clist	America
	Ring Injuries	treatment.		
57.	In Vitro Measures of Hip	The overall goal of our research is to comprehensively characterize	Crist	DOS
	Pathologies	pathology of hip osteoarthritis and to optimize diagnosis, treatment,		
		and clinical outcomes of orthopaedic diseases.		

#	Project Title	Description	PI	Sponsor
58.	Irrisept Trauma	The purpose of this study is to determine the effects of Irrisept and	Crist	Irrimax Corporation
		fractures		
59.	AO Fragility Fractures	The aim of this registry is to investigate the outcome of nonsurgical	Della Rocca	AO
		(conservative) and surgical treatment for FFPs in the elderly, and		
		thereby to specify the indication of operative intervention.		
60.	AO Prospective Registry for	The purpose of this prospective, international, multicenter,	Della Rocca	AO
	Periprosthetic Fractures	observational registry is to gain insight into the osteosynthesis		
		treatment of PPFx, the associated complications, and functional and		
		patient reported outcome after PPFx of hip or knee arthroplasties.		
61.	Pilon NAC	The primary objective is to measure cartilage cell viability utilizing a	Schweser	Research Council
		technique that is frequently performed at our institution examining the		Grant
		number and density of living cartilage cells from a given sample at the		
		time the final surgery is performed.	~ 1	
62.	Syndesmosis Ankle Study	The purpose of this study is to compare early weight-bearing vs.	Schweser	DOS
		delayed weight-bearing following a suture button surgical repair of a		
(2)	D'1	syndesmosis injury.		
63.	Diabetic Ankle Fractures	This study aims to provide initial clinical data towards this goal by	Schweser	AOFAS
		examining the utility of using a post-operative protocol to allow for		
		immediate weight bearing in this patient population.	0.1	DOG
64.	Talus Replacement Registry	To determine if custom 3D printed talar body replacements, either	Schweser	DOS
		used alone or with total ankle replacements, will maintain physiologic		
		hindfoot fusions with allograft lead to good outcome scores and		
		nation statisfaction scores		
65	Gut Microbiome and Postoperative	The purpose of this study is to determine if the overall gut biome has	Schweser	DOS
03.	Fracture Recovery	an impact on post-operative complications	Sellwesel	005
66.	Skin Preparation for Elective Foot	The primary objective is to compare the rate of surgical site infection	Schweser	DOS
00.	and Ankle Surgery	and wound complications following skin preparation for surgery by		200
		using the standard of care skin cleaning (with chlorhexidine/iodine		
		solution) versus standard of care complemented by skin cleaning with		
		isopropyl alcohol and scrubbing with chlorhexidine soap.		
67.	ASES Shoulder PJI Multicenter	The purpose of this study is to prospectively collect pertinent data	Kim	DOS
	Database study	from patients undergoing revision shoulder arthroplasty at our		
	-	institution and contribute to establishing a multicenter database.		
<b>68.</b>	Impact of Video Exposure on	The goal is to determine the educational utility of optimized surgical	London	American Foundation
	Cadaveric Surgical Outcomes	videos.		for Surgery of the
				Hand

#	Project Title	Description	PI	Sponsor
69.	ROM-PROM	The aim of this study is to determine the impact of hand, wrist, and	London	Research Council
		forearm range of motion on patient-reported outcomes after a non-		Grant
		hand injury, such as a wrist fracture.		
70.	Cerner Distal Radius Fx	To utilize Cerner Real World Data	London, Leary	DOS
71.	RANGER	The primary objective of this registry study is to collect utilization,	Nuelle	Axogen Corp
		safety, and functional recovery outcomes data on nerve injuries		
		repaired with the Avance® Nerve Graft.		
72.	Blood Flow Restriction & Tennis	Our objective is to provide evidence-based applied research aimed at	Nuelle (J)	DOS
	Elbow Rehab	improving treatment options and optimizing rehabilitation strategies		
		for lateral epicondylitis by incorporating blood flow restricted training.		
73.	Tornier Shoulder Replacement	The purpose of this study is to collect immediate, medium and long-	Smith	Tornier, Inc.
	Outcomes Study (SHOUT)	term data on the related clinical complications and functional		
		outcomes of market-approved Tornier shoulder products to		
		demonstrate safety and performance of our implants in a real-world		
		setting.		
74.	Punch vs. Drill and Post-operative	The purpose of this study is to determine if different techniques used	Smith	DOS
	Pain	in the creation of suture anchor socket creation can influence post-op		
		pain following rotator cuff repair.		
75.	Pyrocarbon Clinical Follow-up	The objective of this multi-center study is to collect medium and long-	Smith	Tornier, Inc
	Study	term data on the related clinical complications and functional		
		outcomes of the Pyrocarbon Humeral Head to demonstrate safety and		
		performance, in subjects from the Pyrocarbon IDE Study cohort.		
76.	Tempo of Maturation	Identify the timing and tempo of skeletal maturation in juvenile and	Boeyer	None
		adolescent idiopathic scoliosis patients and how that relates to key		
		milestones associated with the Adolescent Growth Spurt. Semi-		
		longitudinal data will be collected from multiple pediatric spine		
		programs around the United States.		
77.	Arthrex Fusion with Staples	The primary objective for the proposed study is to document initial	Summerhays	Arthrex, Inc.
		clinical outcomes for use of nitinol staples for first metatarsal-		
		phalangeal joint (MTP1J) fusion with respect to degree of fusion and		
		maintenance of correction.		
78.	Limb Optimization Registry	This registry is being established to follow patients of the Limb	Crist	DOS
		Optimization Center in The Department of Orthopaedic Surgery		

## TRANSLATIONAL STUDIES

#	Project Title	Description	PI	Sponsor
1.	Limb Optimization Registry	This registry is being established to follow patients of the Limb	Crist	DOS
		Optimization Center in The Department of Orthopaedic Surgery		

#	Project Title	Description	PI	Sponsor
2.	BioJoint ACL - Viable ACL	ACL reconstruction in dogs using MOPS-ACL preserved ACL	Cook	<b>BioJoint Innovation</b>
	Allografts	allografts.		
3.	Cell Cycle-Mediated Optimization	Assessment of tissue engineered articular cartilage for joint restoration	Cook (MU),	NIH NIAMS
	of Cartilage	in a canine model.	Hung (CU)	
4.	FAI Modeling	Assessment of hip stability, ROM, and contact area and pressure	Crist	BioJoint Innovation
		effects of normal, dysplastic, and FAI canine and human hips using		
		robotic testing.		
5.	AANA ALR Recon	In vitro and biomechanical assessments of common graft types used	DeFroda	AANA
		for acetabular labrum repair	<b>D.D.</b> 1	ODEE
6.	OREF ALR Recon	In vitro, biomechanical, and in vivo (canine model) assessments of	DeFroda	OREF
		common graft types used for acetabular labrum repair		
7.	ТКІОМРН Нір	Assess functional outcomes for femoral head OCA and labral MAT in	Crist	MU TRIUMPH
		comparison to THA		Dog
8.	OCD and Skeletal Maturity	Examines OCD lesions in pediatric patients aged / to 18 to determine	Duren, Brimmo	DOS
0	Derrow 41 and 5 English and 1	relationship of healing with skeletal maturity.		
9.	Contilege	In vitro and canine model study evaluating Dexamethasone delivery	COOK (MU),	NIH MIAMS
10	Critical Dariada of Erratura Disk in	I dentifying timing and signs of transient fracture risk in growing	Duran	NIII
10.	Childhood	abildren	Duren	NIH
11	The Value of Skeletal Maturity in	Research to maximize the utility of skeletal maturity assessment in	Duren	DOS & SRS
11.	Orthonaedics	nediatric orthonaedic practice	Durch	DOS & SKS
12	Undating Skeletal Maturity	Undating and improving methods for determining skeletal maturity	Duren	NIH
12.	Methods	from the hand-wrist.		
13.	Stav Strong Stav Healthy Study	Measures body composition and balance across an 8 week	Duren	MU Extension
		intervention.		
14.	Spine Growth and Maturation	Creating models of segmental spine growth based on skeletal	Duren	(NIH pending)
		maturation and designing growth charts and interactive tools for		
		predicting spine growth		
15.	3D limb alignment	Comparison of EOS vs traditional alignment study	Duren, Kfuri	DOS
16.	Heads and Hands	The use of skeletal age to better model biological changes in the	Duren, Sherwood	Triumph
		craniofacial complex.		
17.	Peds ACL	Assess the relationship between injury risk and skeletal growth and/or	Ma, Boeyer	UNCG
		maturation in adolescents with torn Anterior Cruciate Ligaments.		
18.	Determining Sex-Related	Compare outcomes after patellar BTB autograft ACL reconstruction	Ma	<b>BioJoint Innovation</b>
	Differences in ACL Healing after	in male vs female dogs in a validated model.		
	BTB Reconstruction			
19.	Bacteriophage Treatment	Compare local bacteriophage infusion to SOC for infected nonunion	Schweser	OTA
		fractures		

#	Project Title	Description	PI	Sponsor
20.	MOPS-N with PEGf	Evaluate MOPS-N in vitro and in a canine sciatic nerve gap reconstruction model for fresh (viable) peripheral nerve allograft transplantation	J Nuelle	MTF

## **BASIC SCIENCE STUDIES**

#	Project Title	Description	PI	Sponsor
1.	Sex-Related Differences in	Determine sex related differences in the regional production of	Stoker	TLRO
	Biomarker Production in the	biomarkers by OA cartilage tissue from patients undergoing OCA and		
	Osteoarthritic Knee	TKA surgeries to assess the role of sex in OA development and		
		progression and identify novel biomarkers and targets for treatment for		
		OA.		
2.	Comparison of Normal Canine	Determine how chondrocytes respond to stimulation with biomarkers	Stoker	TLRO
	IPFP and Human OA IPFP	released from IPFP obtained from OA patients.		
	Metabolism			
3.	Correlation of Biomarker	Determine patient related variability in biomarker production by the	Stoker	TLRO
	Production by OA IPFP	OA IPFP and identify factors potentially associated with these		
		changes.		
4.	Comparison of Normal Canine	Determine changes in biomarker production by the IPFP associated	Stoker	TLRO
	IPFP and Human OA IPFP	with meniscal allograft transplantation.		
	Metabolism			
5.	Assessment of Biomarkers in	Utilizing serum, urine and synovial fluid to evaluate biomarkers.	Stoker	TLRO
	Biojoint Patients			
6.	Characterizing OA Phenotypes	Develop novel patient cohorts based on the in vitro metabolism of the	Stoker	TLRO
	Based on Chondrocyte Metabolism	chondrocytes obtained after OCA or TKA surgery.		
7.	Correlating OA Chondrocyte	Determine how OA chondrocyte metabolism relates to patient	Stoker	TLRO
	Metabolism to Patient	demographics.		
	Demographics			
8.	Comparing OA and Normal	Determine how OA effects the metabolism of chondrocytes during	Stoker	TLRO
	Chondrocyte Biomarker Production	initial in vitro culture.		
9.	Mapping of the OA Knee, Bone	Determine how the biomechanical properties of the bone change in	Stoker	TLRO
	Biomechanical Properties	response to development of OA and in relation to primary lesion and		
		histological changes.		
10.	Mapping of the OA Knee, Cartilage	Determine how the biomechanical properties of the cartilage change in	Stoker	TLRO
	Tissues Biomechanical Properties	response to development of OA and in relation to primary lesion and		
		histological changes.		
11.	Metabolic Mapping of the	Determine differences in the regional production of various	Stoker	TLRO
	Osteoarthritic Knee Based on	biomarkers in response to compressive load by OA cartilage tissue		
	Responses to Compressive Load	from patients undergoing OCA and TKA surgeries.		

#	Project Title	Description	PI	Sponsor
12.	Metabolic Mapping of Subchondral Bone in OA	Determine differences in the regional production of various biomarkers by the underlying bone collected from undergoing OCA and TKA surgeries to identify novel biomarkers and targets for treatment for OA.	Stoker	TLRO
13.	Develop Novel Tissue Testing Strategies for Cartilage and Subchondral Bone	Develop novel testing methodologies to determine if these novel assessments better relate to tissue metabolism in subsequent studies.	Stoker	TLRO
14.	Biomechanical Mechanisms for Metabolic Responses to Impact Injury and Compressive Loading in OA Cartilage	Determine how biomechanical and histological changes in the OA cartilage tissue correlates to the tissues response to compressive load and impact injury.	Stoker	TLRO
15.	Evaluation of Patient demographics effects on Chondrocyte metabolism during in vitro culture	Determine how patient demographics effect the metabolism of OA chondrocytes during in vitro culture.	Stoker	BioJoint Innovation
16.	Residency Scoring	To standardize and automate scoring procedures using an electronic database to improve efficiency and accuracy for residency applications	Leary, Gupta	DOS
17.	Early Diagnosis of Hip Dysplasia using Serum and Urine Protein Biomarkers	Determine the ability of serum and urine biomarkers to predict CHD in dogs prior to radiographic diagnosis of hip dysplasia in a canine population.	Bozynski/Crist	TLRO\OFA
18.	Metabolic Mapping of Biomarkers for Cartilage Lesion Severity	Determine differences in the regional production of various biomarkers by OA cartilage tissue from patients undergoing OCA and TKA surgeries to identify potential differences in disease progression between these two patient populations and identify novel biomarkers and targets for treatment for OA.	Stoker	BioJoint Innovation
19.	Effects of Cell Culture Split Ratio on Chondrocyte Metabolism	Determine split ratio effects the metabolism of normal canine chondrocytes during in vitro culture.	Stoker	BioJoint Innovation
20.	Effects of Storage Time on OCA Chondrocyte Metabolism	Determine if storage time of the OCA graft effects the metabolism of the chondrocytes harvested from the tissue during in vitro culture.	Stoker	BioJoint Innovation
21.	Metabolic Mapping of the OA Meniscus	Determine the regional production of various biomarkers by normal meniscal tissue to determine how the metabolism changes after meniscal injury and during meniscal degradation.	Stoker	BioJoint Innovation
22.	Correlation of Biomarkers to Basic Science Measures of Knee OA	Determine how biomechanical and histological changes in the OA cartilage tissue correlates to changes in tissue metabolism.	Stoker	BioJoint Innovation
23.	Evaluation of MOPS for Preservation of Elbow OCAs	Determine the effectiveness of the MOPS protocol to store IVD OCA tissues for clinical use.	Stoker, Della Rocca	BioJoint Innovation
24.	Biomarkers for Diagnosis and Disease Staging in OA	Identify serum and urine biomarkers for the diagnosis and disease staging of OA.	Stoker, Sayers, Leary	TLRO
25.	Tibial Microstructure and Bariatric Surgery	Measures of bone/muscle/fat (including uCT and histomorphometry) in Bariatric Surgery patients and controls.	Duren	MU Research Council
26.	Cortical Bone Project	Modeling changes in bone size and density from birth to adulthood.	Duren	NIH

#	Project Title	Description	PI	Sponsor
27.	Skeletal Morphology in Youth Baseball	Assessment of skeletal maturity and other bone morphology in youth sports.	Duren	External
28.	PANDA Study	Assisting ImageBiopsy on their automated skeletal maturity application (PANDA)	Duren	ImageBiopsy
29.	Spine Anatomy in ShapeUp!Kids	Self-supervised Machine Learning approach for derivation of spine lengths from DXA using ShapeUp! Kids	Duren	(NIH pending)
30.	Genomics of Bone and Body Composition Traits in Children	This study aims to identify genes that regulate development of bone density, quality, and strength in childhood.	Duren (MU)	NIH
31.	Growth Plate Properties	Examines anatomy, histology, and material properties of the porcine growth plate across several ages.	Guess, Duren	
32.	Biomechanical Tethers	Determine if cost-benefit of a single tether construct versus a double tether construct and its impact on tether breakage, construct stiffness, etc.	Hoernschemeyer, Boeyer	None
33.	FDA extension for Gait	theoretical extension of methods for more appropriate and comprehesive comparisons for the entire gait cycle	Leary	DOS
34.	Machine Learning for TKA	Using machine learning methods to better understand antecedents of patient satisfaction post-op.	Leary	DOS
35.	Best Statistical Practices in Orthopaedics Research	Best statistical practices in orthopaedics research.	Leary	DOS
36.	NHANES-OA	Comparison of prediction models to answer the question: do computationally intensive analytical techniques actually produce better predictions than statistically appropriate prediction models which incorporate the survey design?	Leary	DOS
37.	DXA2 update	update DXA2	Leary	DOS
38.	QALY Evaluations in Orthopaedics	QALY measures in lower extremity (knee, ankle, hip). Knee considers UKA, TKA, Scope and OCA.	Leary, Cook	Richard Wallace
39.	Machine Learning in Cardiovascular -Omics	Compilation of a data repository from EMR and clinical testing data to test algorithm for longitudinal monitoring of patients with cardiovascular disease.	Leary, Emter	DOS/CVM/Fulbright
40.	Cadaveric biomechanical testing, digital reconstruction	Create a digital model of a knee undergoing OCA surgery to determine the biomechanical impact of different surgical techniques	Williams	TLRO
41.	Development and Validation of a Canine Tail IVD Model	Develop a novel canine caudal tail IVD model for the study of IVD degeneration, identification of novel biomarkers and targets for treatment.	Stoker	TLRO
42.	Effects of Injury on Intervertebral Disc Responses to Inflammation	Determine how injury effects the IVD tissues response to IL-6 and IL- 18 stimulation using the rat tail IVD in vitro model.	Stoker	TLRO
43.	Effects of Insulin Level on Intervertebral Disc Responses to Injury and Inflammation	Determine how insulin level effects the IVD tissues response to IL-6 and IL-18 stimulation using the rat tail IVD in vitro model.	Stoker	TLRO

#	Project Title	Description	PI	Sponsor
44.	Effects of Loading on IVD Degeneration in a Canine Tail Model	Determine how load frequency effects the metabolism of IVDs using the canine tail IVD ex vivo model.	Stoker	TLRO
45.	Effects of Repetitive Compressive Load on Injured Intervertebral Discs	Utilize the rat tail IVD model to determine the role of injury and loading on IVD degeneration.	Stoker	TLRO
46.	Comparison of Canine Lumbar and Caudal tissue metabolism for in vitro modeling	Determining if Canine Caudal tail tissue has similar responses to stimulus in vitro as Canine Lumbar IVD tissues for in vitro modeling purposes	Stoker	TLRO, DOS
47.	Mechanical Testing of Rat and Dog Tail IVDs	Develop mechanical testing protocols to assess changes in tissue biomechanical properties after various stimuli.	Stoker, Choma	TLRO
48.	Biomarkers for Cervical vs Lumbar Disc Degeneration	Determine differences in biomarker production by degenerate cervical and lumbar tissues to identify novel biomarkers and targets for treatment for IVD degeneration.	Stoker, Choma	TLRO, DOS
49.	Disease Mechanisms for Cervical vs Lumbar Disc Degeneration	Determine differences in cytokine stimulated biomarker production by degenerate cervical and lumbar tissues to identify novel biomarkers and targets for treatment for IVD degeneration.	Stoker, Choma	TLRO, DOS
50.	In Vitro Model of Cervical Disc Degeneration	Determine differences in basal and cytokine stimulated biomarker production by degenerate cervical tissues to identify novel biomarkers and targets for treatment for IVD degeneration.	Stoker, Choma	TLRO, DOS
51.	In Vitro Model of Lumbar Disc Degeneration	Determine differences in basal and cytokine stimulated biomarker production by degenerate lumbar tissues to identify novel biomarkers and targets for treatment for IVD degeneration.	Stoker, Choma	TLRO, DOS
52.	In Vitro Model of Lumbosacral Disc Degeneration	Determine differences in basal and cytokine stimulated biomarker production by degenerate lumbosacral tissues to identify novel biomarkers and targets for treatment for IVD degeneration.	Stoker, Choma	TLRO, DOS
53.	Acute Responses of Intervertebral Discs to Injury and Inflammation	Determine the initial response of whole organ IVDs to stimulation with IL-1b and TNF-a to identify potential roles of these cytokines in IVD degeneration using the whole organ Rat Tail IVD model.	Stoker, Choma	TLRO, DOS
54.	Prolonged Responses of Intervertebral Discs to Injury and Inflammation	Determine the initial response of whole organ IVDs to stimulation with IL-1b to identify potential roles of chronic exposure to this cytokines in IVD degeneration using the whole organ Rat Tail IVD model.	Stoker, Choma	TLRO, DOS
55.	Metabolic Responses of Degenerative Cervical and Lumbar Intervertebral Discs to Cytokine Stimulation	Determine the metabolic response of degenerate cervical and lumbar IVD tissues to inflammation.	Stoker, Choma	TLRO, DOS

#	Project Title	Description	PI	Sponsor
56.	Comparison of automated knee radiograph assessment tool and	Determine the efficacy of automated knee scoring system	Stoker, Keeney, C Cook	TLRO, DOS
	physician grading of OA patient radiographs			
57.	Early Cellular Responses to Mechanical Strain by Tissues Involved in ACL Repair	Determine how tensile load effects the metabolism of cells from various tissue important for ACL repair.	Ma	TLRO, DOS
58.	Effect of Time from Surgery on the Metabolism of the Remnant ACL and Synovial Tissue at the Time of ACL Reconstruction Surgery	Determine how time from injury effects the metabolism of the torn ACL and synovium, may indicate how ACL metabolism changes after injury and if needs to be removed during ACL Reconstruction	Stoker	TLRO
59.	Evaluation of Synovial Fluid, Serum, and Urine Biomarker Changes after ACL Reconstruction	Identify potential biomarkers for the assessment of ACL effectiveness and ligamentization of the tendon graft	Stoker	TLRO
60.	Evaluation of the Effect of Estrogen Metabolic Response of Patellar Tendon Tissues to cytokine stimulation	Determine how hormone levels may contribute to sex differences in reconstruction failures	Stoker	TLRO
61.	Metabolic Responses of Ligament and Tendon to Pro-Inflammatory Stimulation	Identify differences in biomarker production by ACL, SYN, and autograft tissues to cytokine stimulation ex vivo.	Stoker	TLRO
62.	Comparison of Metabolism of ACL Remnants, Synovium, and Common ACL Autografts	Identify differences in biomarker production by ACL, SYN, and autograft tissues at the time of ACL reconstruction surgery.	Stoker, Ma	TLRO, DOS
63.	Biomarkers for ACL Rupture	Identify differences in biomarker production by ACL and SYN tissues at the time of ACL reconstruction surgery.	Stoker, Ma	TLRO, DOS
64.	Metabolic Characterization of Common Autografts used for ACL Reconstruction	Identify differences in biomarker production by ACL, SYN, and autograft tissues at the time of ACL reconstruction surgery.	Stoker, Ma	TLRO, DOS
65.	Stryker ADM Acetabular System Clinical Trial	To evaluate and determine the success rate, defined as absence of postoperative femoral head dislocation, at 10 years with the Restoration ADM X3 Acetabular System.	Aggarwal	Stryker Orthopaedics