ORS Research Section 2022 Award Finalists
We are excited to announce those identified as ORS Research Section Award finalists based on their accepted presentations at the ORS 2022 Annual Meeting in Tampa, Florida. Research Section Award finalists were identified by each Research Section. Finalists are primary authors and members of ORS and the ORS Research Section.

Recipients will be announced during the ORS Closing Session to be held in-person Tuesday, February 8 from 1:30 PM – 2:15 PM.

Names appear in alphabetical order under each Research Section award category.

ORS International Section of Fracture Repair (ISFR)

Podium
Presentation #: 243
Critical Role of IGF1/CXCR4 Signaling in Regulating HIF1a And HIF2a Expression in Fracture Repair Total
Alessandra Esposito, PhD, Rush University Medical Center

Presentation #: 245
Molecular Signatures Distinguish Callus Senescent Cells from Inflammatory Cells
Jiatong Liu, University of Rochester Medical Center

Presentation #: 176
Mircorna-181a/b-1 Enhances Bone Fracture Repair, In Part, By Suppression of Pyruvate Dehydrogenase Kinase-4
Hongjun Zheng, PhD, Washington University in St. Louis

Poster
Presentation #: 492
Reambulation Protects Against Extended Disuse Induced Impairments in Murine Fracture Healing
Evan Buettmann, PhD, Virginia Commonwealth University

All 2022 abstracts accepted for presentation can be found: https://www.ors.org/abstract-search/ or via the ORS 2022 Annual Meeting Mobile App.
Presentation #: 1342
Fast-tracking Aged Fracture Repair Research with A Progeria Mouse Model and Accumulation of Cellular Senescence
Victoria Duke, Steadman Philippon Research Institute, Center for Regenerative and Personalized Medicine

Presentation #: 364
Immunomodulatory Hydrogels for Bone Regeneration in Response to Bisphosphonate-related Osteonecrosis of The Jaw
Katherine Griffin, UC Davis

Presentation #: 465
Large-scale Optimization to Determine the Soft-hard Mechanical Properties of Ovine Fracture Callus
Brendan Inglis, Lehigh University

Presentation #: 449
Diversity of Prx1 Stem/progenitor Cells and Their Regulation for Bone Regeneration
Yu Liu, DMD, Boston University

Presentation #: 466
CGAS Inhibitor - RU.521 Improves Fracture Healing in A Polytrauma Rat Model
Preeti Muire, MSc, PhD, US Army Institute of Surgical Research (USAISR)

Presentation #: 1252
Injectable Mineral Coated Microparticles Platform to Enhance Mrna Delivery for Fracture Repair
Anna-Laura Nelson, MS, Steadman Philippon Research Institute

Presentation #: 503
Estrogen Receptor α (ERα) In Osteoblasts Is Crucial for Mediating Vibration-induced Effects on Bone Fracture Healing
Lena Steppe, MS, Institute of Orthopaedic Research and Biomechanics

Presentation #: 1644
Chronic Opioid Use Following Geriatric Hip Fracture Surgery-- Risk Factors, Trends, And Outcomes
Julia Stone, California University of Science and Medicine

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Presentation #: 488
Chronic Psychosocial Stress Disturbs Fracture Healing Via Catecholamines Produced by Myeloid Bone Marrow Cells
Miriam Tschaffon, M.Sc., Institute of Orthopaedic Research and Biomechanics, Ulm university

ORS Meniscus Research Section

Podium
Presentation #: 135
Cartilage Progenitor Cell Line Stimulates Meniscus Repair and Protects Cartilage from Degeneration, In-vivo
Salomi Desai, MS, Brown University/Rhode Island Hospital

Presentation #: 134
In-vivo Identification of Constitutive Material Parameters of Healthy and Osteoarthritic Lateral Menisci Based on Magnetic Resonance Imaging And Inverse Finite Element Analysis
Jonas Schwe, MS, Institute of Orthopaedic Research and Biomechanics

Presentation #: 136
CD44-Incorporated Bioactive Glue to Promote Healing of Lubricin-Infiltrated Avascular Meniscus Tears
Solaiman Tarafder, PhD, Columbia University

Poster
Presentation #: 1888
A Tale of Two Loads: Regional Variation and Inflammation in Meniscus Mechanoresponsive Pathways Using Two Models of Mechanical Loading
Benjamin Andress, Duke University

Presentation #: 1021
Medial and Lateral Meniscal T2* Within Elite Basketball Players and Swimmers
Erin Argentieri, Hospital for Special Surgery

Presentation #: 1890
Mononuclear Leukocytes Induce Catabolism of Meniscus Tissue
Kevin Betsch, Duke University

Presentation #: 1024
The In-vitro Test Conditions Influence the Biomechanical Properties of Degenerated Lateral Menisci - A Comparative Study at Two Laboratories

All 2022 abstracts accepted for presentation can be found: https://www.ors.org/abstract-search/ or via the ORS 2022 Annual Meeting Mobile App.
Luisa de Roy, PhD, Institute of Orthopaedic Research and Biomechanics, Ulm University

Presentation #: 1028
Imaging with Synchrotron Light Reveals Collagen Crimp Patterns of Ex Vivo Human Meniscus
Martin Englund, MD, PhD, Lund University

Presentation #: 1019
Advanced Glycation End-product Accumulation Differs by Location and Sex in Aged Human Menisci
Austin Gouldin, Virginia Commonwealth University

Presentation #: 1020
Cyclic Tensile Stretch Modulates Inflammatory Effects for Both Inner and Outer Zone Porcine Meniscal Cells
Rebecca Irwin, PhD, Duke University School of Medicine

Presentation #: 1897
Effect of Solute Size on Partition Coefficient in Porcine Meniscus
Alicia Jackson, PhD, University of Miami

Presentation #: 1290
Partially Demineralized Bone Plugs Improve Collagen Fiber Organization and Mechanical Performance Within Tissue Engineered Entheses
Jongkil Kim, MS, Cornell University

Presentation #: 1030
RNA Sequencing Reveals Donor Variability in Sex- And Age-matched Human Meniscal Fibrochondrocyte Response to Estrogen
Kelsey Knewtson, PhD, University of Kansas

Presentation #: 1895
Removal of GAGs Improves Mechanical Properties and Increases Resistance to Failure in Tissue Engineered Meniscal Enthesis
Serafina Lopez, Cornell University

Presentation #: 1022
Meniscus Allograft Augmentation Combining Meniscus and Mesenchymal Stromal Cells
Caroline Struijk, MD, Mayo Clinic

All 2022 abstracts accepted for presentation can be found: https://www.ors.org/abstract-search/ or via the ORS 2022 Annual Meeting Mobile App.
Presentation #: 1023
Influence of Menisci on Tibiofemoral Contact Mechanics in Human Knees: A Systematic Review
Matthias Sukopp, MS, Institute of Orthopaedic Research and Biomechanics, Centre of Trauma Research, Medical Centre

Presentation #: 1033
Interference Screw Vs Transosseous Suture Fixation of The Posterior Horn of Medial Meniscus Allograft
Rae Tarapore, Rutgers Robert Wood Johnson Medical School

Presentation #: 1034
Differential Regulation of Sdf1/cxcr4 Signaling Arms in Progenitor Cell-mediated Meniscus Repair
Jay Trivedi, PhD, Brown University/Rhode Island Hospital

Presentation #: 1899
Combination of Cartilage Progenitors and Kartogenin in A Collagen I Laden Matrix For Application In Meniscus Tissue Repair
Daniel Yang, Alpert Medical School of Brown University

ORS Orthopaedic Implants Research Section

Podium
Presentation #: 206
A Comparison of The Fixation Stability of Augmented Implant And Bone Graft-based Reverse Shoulder Arthroplasty Techniques To Treat Patients With Glenoid Erosion
Joshua Giles, PhD, University of Victoria

Presentation #: 350
Mri-based Radiomic Analysis of Soft Tissue Reactions Near Total Hip Arthroplasty
Kevin Koch, PhD, Medical College of Wisconsin

Presentation #: 32
Multi-layered Mechanically Robust Composite Scaffolds for Osteochondral Defect Repair
Mark Lemoin, MSc PhD, Royal College of Surgeons in Ireland

Presentation #: 1317
Evaluating Tka Implant and Soft-tissue Interaction Using Multi-patient Forward Dynamics Modeling Approach
Amitkumar Mane, MS, PhD, DePuy Synthes

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**Poster**

**Presentation #: 383**
3D Printed PEEK Has Lower High-Cycle Fatigue Life Than Injection Molded PEEK
Leandra Bowsman, Case Western Reserve University

**Presentation #: 1794**
Immunofluorescent Techniques as A Tool For Rapid And Quantifiable Detection Of Bacterial Biofilms And Bioburden On Surgical Explants, Tissue, And Synovial Fluid
Dioscaris Garcia, PhD, Brown University/Rhode Island Hospital

**Presentation #: 1717**
Fretting and Corrosion Of Dual Mobility Hip Metal Liners: Role Of Design, Microstructure, And Malseating
Deborah Hall, Rush University Medical Center

**Presentation #: 1736**
Correlation of The Chemical Signature Of Periprosthetic Macrophages With The CoCr Head Wear Rate In Hip Resurfacing
Songyun Liu, MS, Rush University Medical Center

**Presentation #: 1249**
Is Fretting Corrosion Damage A Concern in Titanium-backed Ceramic-on-Ceramic Liners?
Daniel MacDonald, MS, Drexel University

**Presentation #: 1483**
Differences in The Superficial Zone Behavior Between Human And Bovine Cartilage - A Finite Element Analysis
Steven Mell, PhD, Rush University

**Presentation #: 1643**
Spinopelvic Mobility In THA And Lumbar Fusion Patients Across A Range Of Common Functional X-ray Positions
Casey Myers, PhD, MBA, Center for Orthopaedic Biomechanics - University of Denver

**Presentation #: 802**
Effects Of Reverse PAO On Acetabular Retroversion And Hip Capsular Mechanics
Geoffrey Ng, PhD, Western University

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Presentation #: 1745
*Geometrical Accuracy Of Ct-based Virtual Implantation For Computational Modeling*
Fernando Quevedo Gonzalez, PhD, Hospital for Special Surgery

Presentation #: 1048
*Fairness Assessment Of Predictions In Total Shoulder Arthroplasty Outcomes*
Christopher Roche, MSE, MBA, Exactech, Inc.

Presentation #: 1253
*Serum Cytokine Profile In Women And Men With A Total Joint Replacement*
Lauryn Samelko, PhD, Rush University Medical Center

Presentation #: 1876
*Assessment of Kinematic Uncertainty During Knee Joint Loading In A Dynamic Gait Simulator*
Brett Steineman, PhD, Hospital for Special Surgery

Presentation #: 1714
*Quantitative Susceptibility Mapping of Brain Regions To Assess Metal Deposition Following Total Hip Arthroplasty And Hip Resurfacing Arthroplasty*
Matthew Teeter, PhD, Western University

Presentation #: 1907
*Central Fixation Element Type and Length Affect Glenoid Baseplate Micromotion In Reverse Shoulder Arthroplasty*
Lawrence Torkan, M.A.Sc., Queen's University

**ORS Preclinical Models Research Section**

3Rs
Presentation #: 1537
*Prediction of Human Disease Status From Murine Osteoarthritis Models*
Deva Chan, PhD, Purdue University

Presentation #: 644
*Treatment with An Extracellular Matrix-blood Composite Impacts Animal Gait Without Damaging Joint Structure In A Dunkin Hartley Guinea Pig Model*
Braden Fleming, PhD, Rhode Island Hospital/Warren Alpert Medical School of Brown University

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Presentation #: 654
Pharmacokinetics of An Intra-articular Extended Release Flavopiridol-PLGA Formulation In Small And Large Animal Models
Dominik Haudenschild, PhD, University of California Davis

Presentation #: 1764
High-Throughput Semi-Automated Segmentation of Murine Hindpaw Micro-CT Datasets Identifies The Cuboid As A Reliable Longitudinal Biomarker Of Arthritic Progression In TNF-Tg Mice
H. Mark Kenney

Podium
Presentation #: 144
Complement Factor D/Adipsin Knockout Mice Demonstrate Disparate Pain and Structural Damage Phenotypes In Obesity-induced Post Traumatic Osteoarthritis
Kelsey Collins, PhD, Washington University in St. Louis

Presentation #: 247
Natalia Harasymowicz, PhD, Washington University St Louis

Presentation #: 153
Pre-clinical Evaluation of A Nanoparticle Formulation Of Mithramycin A For Treatment Of Ewing Sarcoma
Jason Horton, PhD, SUNY Upstate Medical University

Presentation #: 1387
Conditional Deletion of Camkk2 From Osteocytes Enhances Secretion Of Calpastatin To Modulate Osteoclasts And Regulate Bone Remodeling In A Sex-dependent Manner
Justin Williams, MS, Indiana University School of Medicine

Poster
Presentation #: 1455
Joint Restabilization Does Not Mitigate Early Inflammation Associated with ACL Injury In Mice
Blaine Christiansen, University of California Davis

Presentation #: 1611
Feasibility and Function Of A Muscle-driven Endoprosthesis In An In Vivo Rabbit Model
Katrina Easton, DVM, PhD, University of Tennessee

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Presentation #: 950
Correlation Between MRI T2-value And Standardized Histopathology Score of Rabbit Intervertebral Disc Degeneration Model Induced By Monosodium Iodoacetate
Koki Kawaguchi, MD, Mie University Graduate School of Medicine

Presentation #: 1305
Voluntary Wheel Running Promotes Sex-Dependent Changes in The Disease Progression Of TNF-Tg Mice With Inflammatory Erosive Arthritis
H. Mark Kenney, MS, University of Rochester Medical Center

Presentation #: 1339
Testing A New Microparticulate Depot Formulation of Buprenorphine For Sustained Post-surgical Analgesia In Mouse Femoral Fracture Models
Annemarie Lang, DVM, PhD, Charite-Universitaetsmedizin Berlin

Presentation #: 1315
Is Sex an Important A Biological Variable In Murine Radiotherapy Models?
Megan Oest, PhD, SUNY Upstate Medical University

Presentation #: 1457
Differences in Bony Bar Formation After Growth Plate Injury In Male And Female Rats
Karin Payne, University of Colorado Anschutz Medical Campus

Presentation #: 479
Effect of HoxA Genes On Bone Morphogenesis And Outgrowth During Murine Digit Tip Regeneration
Feini Qu, VMD, PhD, Washington University in St. Louis

Presentation #: 1966
Adaptation of An Experimental Model Of Bone Marrow Lesions Using The Rat Femoral Condyle
Holly Stewart, VMD, Colorado State University

Presentation #: 396
Development of Bisphosphonate-conjugated Antibiotics To Target Staphylococcus Aureus Biofilm Within The Osteocyte Lacuno-canalicular Network Of Infected Cortical Bone In Chronic Osteomyelitis
Chao Xie, MD, University of Rochester

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ORS Spine Research Section

Podium

Presentation #: 266
Raloxifene Stimulates Estrogen Signaling to Protect Against Age-And Sex-related Intervertebral Disc Degeneration In Mice
Neharika Bhadouria, Purdue University-West Lafayette/IUPUI

Presentation #: 39
Deficits in Cartilage Endplate Composition Assessed By UTE MRI Associate With More Severe Disc Degeneration In Patients With Chronic Low Back Pain
Noah Bonnheim, PhD, University of California, San Francisco

Presentation #: 115
An In-vivo Model of Ligamentum Flavum Hypertrophy Capturing Early Stage Inflammation & Later Stage Hypertrophy
Kevin Burt, Columbia University

Presentation #: 23
Infectious and Autoinflammatory Etiologies Of Modic Type 1 Changes Have Different Cytokine Profiles
Irina Heggli, MS.c, Center of Experimental Rheumatology, University Hospital, University of Zurich, Switzerland

Presentation #: 37
Conditional Deletion of Hif-2a In The Nucleus Pulposus Ameliorates Aging-dependent Early Degenerative Changes In The Mouse Intervertebral Disc
Shira Johnston, Thomas Jefferson University

Presentation #: 21
Spatial Distribution of Fat Within The Multifidus: Implications Relative To Spinal Biomechanics And Discogenic Pain
Karim Khattab, University of California, San Francisco

Poster

Presentation #: 1814
Hmgb1 Exhibits a Sustained Regional Activation Following Injury Of The Intervertebral Disc
Kevin Burt, Columbia University

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Presentation #: 1108
Tgfβ Signaling Is Required for Sclerotome Resegmentation During Development Of The Spinal Column In Gallus Gallus
Sade Clayton, PhD, University of Alabama at Birmingham

Presentation #: 954
Effects Nucleus Pulposus Hydration on T1p And T2 Relaxation Times
Megan Co, The Ohio State University

Presentation #: 1799
On the Effects Of Human Surgical Intervertebral Disc Tissue Promoting An Inflammatory Disc Degeneration Environment In Vitro
Jennifer Gansau, MS, Icahn School of Medicine at Mount Sinai

Presentation #: 1521
Link N Suppresses Periostin Expression in Osteoarthritic Cartilage
Michael Grant, PhD, Link N Suppresses Periostin Expression in Osteoarthritic Cartilage

Presentation #: 1831
Actomyosin Contractility Protects Elastic and Viscoelastic Material Properties Of The Nucleus Pulpous Against Inflammatory Stimulation
Timothy Jacobsen, Meng, Columbia University

Presentation #: 1988
Asymmetrical Lumbar Intervertebral Motion in Chronic Low Back Pain
Marit Johnson, PhD, University of Pittsburgh

Presentation #: 1822
Donor Sex Is a Significant Contributor To The Response Of The Intervertebral Disc To Injury In Vitro
Hagar Kenawy, Columbia University

Presentation #: 938
Comparison of Metabolic Responses Of Cervical And Lumbar Intervertebral Discs Recovered From Human Tissue Donor Spines
Jacob Kramer, University of Missouri-Columbia

Presentation #: 1825
Suppression of Sost/sclerostin And Dickkopf-1 Promote Intervertebral Disc Structure In Mice
Tori Kroon, MS, IUPUI

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Presentation #: 1833
Multiplex CRISPRa Upregulation of Pro-survival Genes Improves Cell Viability In ECM Producing Cells
Hunter Levis, University of Utah

Presentation #: 1827
Immunomodulation by Stimulated Mesenchymal Stem Cells In A Rat Intervertebral Disc Model
Lauren Lisiewski, MS, Columbia University

Presentation #: 945
Single-Cell RNA-Sequencing Atlas of Bovine Caudal Intervertebral Discs Reveals Heterogeneous Cell Populations
Christopher Panebianco, Icahn School of Medicine at Mount Sinai

Presentation #: 959
A Mechano-Responsive Annular Repair Device for Biologics Delivery In The Goat Cervical Spine
Ana Peredo, University of Pennsylvania

ORS Strategies in Clinical Research Section

Podium
Presentation #:271
Combination of Preoperative Proms Phenotype (Pain, Function And Mental Health) Predicts Outcome After Total Knee Arthroplasty
Nicolas Piuzzi, MD, Cleveland Clinic

Poster
Presentation #:1543
Outcomes of Total Knee Replacement Measured By Threshold And Minimum Clinically Important Difference Methods
Roy Aaron, MD, Brown University

Presentation #:734
ORS Open Door: Advocating for A World Without Musculoskeletal Limitations
Chelsea Bahney, PhD, The Steadman Clinic & Steadman Philippon Research Institute

Presentation #:1700
Ebjis Definition for Periprosthetic Joint Infection: Questionable Accuracy
Emanuele Chisari, MD, Rothman Orthopaedic Institute

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Presentation #:1926  
Psychosocial Factors Play a Greater Role In Preoperative Symptoms For Patients With Atraumatic Shoulder Instability: Data From The MOON-Shoulder Group  
Cale Jacobs, University of Kentucky

Presentation #:1714  
Quantitative Susceptibility Mapping of Brain Regions To Assess Metal Deposition Following Total Hip Arthroplasty And Hip Resurfacing Arthroplasty  
Matthew Teeter, PhD, Western University

Presentation #: 679  
Orthopaedic Surgery Patients from Rural Areas Present With Worse PROMIS Scores For Physical And Mental Health  
Elizabeth Yanik, PhD, ScM, Washington University in St. Louis

ORS Tendon Research Section

Podium  
Presentation #:155  
Non-muscle Myosins Are Critical Regulators of Skeletal And Connective Tissue Formation  
Mary Evans, University of Pennsylvania

Presentation #: 225  
Hedgehog Signaling Directs Cell Differentiation and Improves Enthesis Healing By A Cell-autonomous Mechanism  
Fei Fang, PhD, Columbia University Medical Center

Presentation #: 52  
Janus Tough Adhesives for Tendon Immunomodulation  
Benjamin Freedman, PhD, Wyss Institute for Biologically Inspired Engineering at Harvard University

Presentation #: 160  
Collagen XII Is a Critical Regulator Of Tendon Function: Development Of A Conditional Mouse Model  
Ashley Fung, MEng, University of Pennsylvania

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Presentation #: 230
Hedgehog Pathway Stimulation Improves Zonal Tendon-To-Bone Integration
Timur Kamalitdinov, University of Pennsylvania

Presentation #: 1154
Targeted, Inducible Depletion of Scx<sup>Lin</sup> Cells Disrupts Tendon Homeostasis And Accelerates Aging-associated Compositional And Structural Changes In The Extracellular Matrix
Antonion Korcari, MS

Presentation #: 229
Embryonic Tendon Exhibits Stage-specific Healing Responses to Injury In A Novel Explant Model
Phong Nguyen, MS, University of Rochester

Presentation #: 156
Recruitment of Perichondrial Hoxa11-expressing Stem/progenitor Cells Into Disrupted Mouse Tendons
Guak-Kim Tan, PhD, Shriners Hospitals for Children

Presentation #: 190
The Formation of Disulfide Hmgb1 (dshmgb1) In Tendon Matrix Mediates Tendinopathy Development Due To Mechanical Overloading
Jianying Zhang, PhD, University of Pittsburgh

Poster
Presentation #: 1165
Spatial Transcriptomics Defines Key Transcriptional Regulators Driving Fibrotic Tendon Healing
Jessica Ackerman, MS, University of Rochester Medical Center

Presentation #: 1283
Slow Continuous Stretch and Cyclic Loading Differentially Drive Ligament-to-Bone Enthesis Maturation
Michael Brown, PhD, Virginia Commonwealth University

Presentation #: 1154
Targeted, Inducible Depletion of Scx<sup>Lin</sup> Cells Disrupts Tendon Homeostasis And Accelerates Aging-associated Compositional And Structural Changes In The Extracellular Matrix
Antonion Korcari, MS, University of Rochester

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Presentation #: 1195
*Interrogating Bursa-tendon Crosstalk in A Tissue Explant Platform*
Brittany Marshall, Columbia University

Presentation #: 2070
*Tendon Mechanical Properties Are Enhanced Via Upregulation of Lysyl Oxidase-mediated Collagen Crosslinking*
Phong Nguyen, MS, University of Rochester

Presentation #: 1174
*Conditional Deletion of Piezo1 in Scleraxis-lineage Cells During Healing Alters Cellular Activation And Impairs Tendon Function*
Anne Nichols, PhD, University of Rochester Medical Center

Presentation #: 1537
*Prediction of Human Disease Status from Murine Osteoarthritis Models*
Kaichi Ozone, M.Sc., Saitama Prefectural University

Presentation #: 1163
*Il-6 Signaling Mediates Progenitor-induced Tendon Core Breakdown and Is Inhibited by Extrinsic Macrophages*
Tino Stauber, Balgrist University Hospital, University of Zurich & Institute for Biomechanics, ETH Zurich

Presentation #: 1188
*Adaptive Response to Pregnancy and Lactation Optimizes the Balance Between Calcium Homeostasis And Mechanical Integrity Of The Maternal Humerus Bone And Supraspinatus Tendon Enthesis*
Yilu Zhou, PhD, University of Pennsylvania

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