

CATHAL J. KEARNEY

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EMPLOYMENT

- Oct. 2018 – Present** Senior Lecturer, Department of Anatomy, and Principal Investigator Kearney Lab and Tissue Engineering Research Group, Royal College of Surgeons in Ireland (RCSI), Dublin, Ireland
- May 2018 – Present** Adjunct Assistant Professor, Mechanical & Manufacturing Engineering and Principle Investigator in Trinity Biomedical Sciences Institute, Trinity College Dublin, Ireland
- May 2017 – Oct. 2018** Lecturer, Department of Anatomy, RCSI and Principal Investigator Kearney Lab and Tissue Engineering Research Group, RCSI, Dublin, Ireland
- Mar. 2014 – May 2017** Tissue Engineering Research Group, RCSI & the Advanced Materials and BioEngineering Research Center (AMBER), Dublin, Ireland. Advisor: Prof. Fergal O'Brien
- Mar. 2011 – Feb. 2014** The Mooney Lab, Harvard School of Engineering and Applied Sciences & Wyss Institute for Biologically Inspired Materials, Cambridge, MA, USA. Advisor: Prof. David Mooney

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA

- Ph.D.** Harvard/MIT Division of Health Sciences and Technology, January 2011 GPA: 4.9/5.0
Major: Medical Engineering & Mechanical Engineering
Minor: Mechanical Engineering. Qualified in Mechanical Engineering January 2007
Thesis: Non-Invasive Shock Wave-Stimulated Periosteum for Bone Tissue Engineering
Advisor: Prof. Myron Spector
- S.M.** Mechanical Engineering, July 2006 GPA: 4.8/5.0
Thesis: Mechanical Behavior of Ultrastructural Biocomposites
Advisors: Prof. Mary Boyce & Prof. Christine Ortiz

TRINITY COLLEGE DUBLIN, IRELAND

- B.A., B.A.I.** Mechanical & Manufacturing Engineering, June 2004 First Class Honors (Distinction)

AWARDS & DISTINCTIONS

- Royal College of Surgeons in Ireland Research Day, Best PhD Poster (Supervisor), 2018
- Selected in Top 100 Healthcare Professionals 2017 by Irish Pharmacy News
- RCSI President's Teaching Award for Best Lecturer (selected by Year 1 & 2 students), 2017
- Marie Skłodowska Curie Research Fellow, European Commission, 2015 – 2017
- Irish Laboratory Awards Best Lab (awarded to the Tissue Engineering Research Group, in which I'm a PI) 2017
- European Foundation for the Study of Diabetes, Albert Renold Short Term Fellow, 2016
- European Molecular Biology Org (EMBO) Short Term Fellow, 2016
- Selected for Tissue Engineering Journal's Young Editor Board (from >450 Global Applicants), 2015 - 2016
- Supervisor on Thesis awarded *Best MPharm Thesis at RCSI*, 2016
- Last Author Bioengineering in Ireland Best Drug Delivery Paper, 2016
- Bioengineering in Ireland Royal Academy of Medicine in Ireland Medal for Best Paper at Conference, 2015
- Last Author Bioengineering in Ireland Best Masters Student Poster, 2015
- Tissue Engineering and Regenerative Medicine International Society World Congress, Travel Award, 2015
- Selected for *Future Faculty Workshop*, NSF/Northeastern Univ. Advance, USA, 2012
- Leaders in Global Health Transformation Fellow, MIT LIGHTS, 2009-2010
- Fulbright Scholar, Massachusetts Institute of Technology, Irish Fulbright Board, 2004-2009
- Best Student, Institute of Engineers of Ireland, 2003
- Stanford Smith Prize in Mechanical Engineering, Trinity College Dublin, 2003
- E.R. Stuart Prize in Engineering, Trinity College Dublin, 2003

Research Funding

Irish Research Council Government of Ireland Postgraduate Scholarship & RCSI co-fund (Student: Francesco Santarella). "Development of a novel skin wound healing scaffold using induced pluripotent stem cells." 2019 – 2022. Supervisor. **€86,000 (\$95,500)**

Irish Research Council Enterprise Partnership Scheme with Inkind & RCIS co-fund (Student: Natalie McEvoy). "The relationship between Sub Epidermal Moisture (SEM) measurement and Inflammatory markers in the early identification of Pressure Ulcers." 2019-2023. Co-Supervisor **€107,000 (\$119,000)**

Advanced Materials and BioEngineering Research (AMBER) Center and Science Foundation Ireland PhD Studentship (Student: Haritha Jacob). "Timed to Perfection: Development of a novel circadian drug delivery platform and its application in osteoarthritis." 2018 – 2022. Supervisor. **€146,000 (\$165,500)**

European Research Council Starting Grant: "Bilayered ON-Demand Scaffolds: On-Demand Delivery from Induced Pluripotent Stem Cell-Derived Scaffolds for Diabetic Foot Ulcers". 2017 – 2022. Principal Investigator. **€1,375,000 (\$1,586,000)**

Marie Curie MedTrain COFUND Postdoc Fellowship (Fellow: Ronaldo do Amaral). "Development of novel constructs through incorporation of platelet-rich plasma into collagen-glycosaminoglycan scaffolds for wound repair". 2017 – 2019. Co-Supervisor. **€120,000 (\$138,500)**

Irish Research Council Postdoctoral Fellowship (Fellow: Ronaldo do Amaral). "Development of novel constructs through incorporation of platelet-rich plasma into collagen-glycosaminoglycan scaffolds for wound repair". 2017 – 2019. Supervisor. **€91,790 [not taken – see previous] (\$105,000)**

Enterprise Ireland ERC Proposal Preparation Support. "Next generation biomaterial scaffolds for diabetic foot ulcer healing". 2016-2017. Principal Investigator. **€5,750 (\$6,600)**

Albert Renold Short Term Fellowship (from the European Foundation for the Study of Diabetes). "Tissue engineering scaffolds from iPS-derived fibroblast produced extracellular matrix for diabetic wound healing". 2016. Fellow. **€7,560 (\$8,700)**

European Molecular Biology Organisation Short Term Fellowship. "iPSC-fibroblast derived extracellular matrix for biomaterials." 2016. Fellow. **€5,500 [non-cash EMBO fellowship taken – see previous] (\$6,330)**

European Commission Marie Skłodowska Curie Individual Fellowship. "Temporally controlled delivery of vascular therapeutics from a regenerative template for diabetic wound healing." 2015-2017. Fellow. **€186,000 (\$214,000)**

Royal College of Surgeons in Ireland Internationally Peer-Reviewed Seed Fund Award. "Ultrasound-responsive Alginate for On-Demand Release of Angiogenic Nanoparticles." 2014. Principle Investigator. **€30,000 (\$34,500)**

Fulbright Studentship to Massachusetts Institute of Technology. 2004-2009. **€18,000 (\$20,700)**

RESEARCH SUPERVISION

Current Graduate Students:

Natalie McEvoy (Spring 2019 – Present; Irish Research Council PhD Studentship). PhD Secondary Supervisor. "The relationship between Sub Epidermal Moisture (SEM) measurement and Inflammatory markers in the early identification of Pressure Ulcers."

Haritha Jacob (Fall 2018 – Present; AMBER PhD studentship). PhD Primary Supervisor. "Timed to Perfection: Development of a novel circadian drug delivery platform and its application in osteoarthritis"

Francesco Santarella (Winter 2017 – Present; Irish Research Council PhD Studentship). PhD Primary Supervisor. "Development of a novel skin wound healing scaffold using induced pluripotent stem cells."

Catherine Sirafim (Fall 2016 – Present; RCSI Strategic Academic Recruitment fellowship). PhD Primary Supervisor. "On-Demand Delivery of Nucleic Acid Therapeutics for Temporally Controlled Treatment of Diabetic Foot Ulcers"

Graduated Students:

PhD:

Emily Ryan (Fall 2015 – Present; Irish Research Council PhD Studentship). PhD Co-advisor with Prof. Fergal O'Brien. "Novel antibiotic free scaffold for the treatment of infection and regeneration of bone."

MSc: Mr. Sean McGrath (First class honors/Distinction and Gold Medal award from Trinity), Ms. Badriah Ali (Honor; Funded by Ministry of Education, Kuwait), Ms. D. Gilroy (First class honors/Distinction), Ms. F. O'Gorman (First class honors/Distinction; Best drug delivery paper, Bioengineering in Ireland Conference 2017), Ms. E. Whittle (First class honors/Distinction; Best MPharm Thesis 2016, RCSI), Mr. S. Kelley (First class honors/Distinction).

Undergraduates: RCSI – 10 summer students (3 awarded internationally peer-reviewed funding for their projects); Harvard – 3 Thesis projects (all A grades) and 1 Research Experience for Undergraduates (REU) student; MIT – 3 undergraduate researchers.

Current Postdoctoral Fellows:

Rukmani Sridharan (Fall 2017 – Present). Primary Supervisor. Projects include development of novel scaffolds from induced pluripotent stem cell-derived tissue and delivery of small molecules for immunomodulation.

Tauseef Ahmad (Fall 2017 – Present). Primary Supervisor. Projects include on-demand delivery from biomaterial scaffolds and delivery of small molecules for immunomodulation.

Milica Marinkovic (Summer 2018 – Summer 2019). Primary Supervisor. Projects include development of novel scaffolds from induced pluripotent stem cell-derived tissue and enhancing matrix production from these cells.

Ronaldo do Amaral (Fall 2016 – Present). Primary Supervisor (2016 – 2017); Co-supervisor (2017 – Present). Projects include understanding temporally-controlled delivery of platelet-derived growth factor and development of a novel scaffold for platelet rich plasma delivery.

TEACHING EXPERIENCE

Dept. of Anatomy, Royal College of Surgeons in Ireland	Anatomy (Spring 2014 – Present) Lecturing, guided dissection, and written and oral examining for Medicine, Pharmacy and Physiotherapy students. Wrote and published <i>Neuroanatomy Distilled</i> a guide for RCSI medical students to enhance neuroanatomy knowledge.
Mechanical Engineering Dept. Massachusetts Institute of Technology	Medical Sciences Course (Fall 2015 – Present, Course Co-Ordinator) Intensive 2-week course that introduces the medical sciences to engineering/science graduates from industry or academia. Material taught includes: Anatomy of Targeted Drug Delivery; Materials for Immunomodulation; and Neuroanatomy and the Sensory Organs Global Health Think Tank (Course Coordinator, Jan. 2010) Founded, developed, and acquired funding for an MIT Global Health Think Tank course. Biomaterials: Tissue Interactions (Teaching Assistant: Fall 2006, 2009) <i>Course Faculty: Dr. Myron Spector & Prof. Ioannis Yannas</i> Student Evaluation: 5.9/7.0 Design of Medical Devices and Implants (Teaching Assistant: Spring 2007) <i>Course Faculty: Dr. Myron Spector & Prof. Ioannis Yannas</i> Student Evaluation: 6.5/7.0

GRADUATE COURSE WORK

Medicine & Bioengineering: Human functional anatomy; Principles and practice of tissue engineering; Fields, forces, and flows in biological systems; Quantitative physiology: Organ transport systems; Human pathology; Molecular biology and genetics in modern medicine; Cardiovascular pathophysiology; Respiratory pathophysiology; Renal pathophysiology; Introduction to clinical medicine.

Mechanics and Materials: Mechanics of solid materials; Molecular, cellular and tissue biomechanics; Mechanics of continuous media; Solid mechanics: plasticity and inelastic deformation; Dynamics; Physical chemistry of polymers.

Manufacturing and Design: Multiscale system design and manufacturing; Manufacturing processes; Computational science and engineering.

PROFESSIONAL AFFILIATIONS

2019	Specialist Member Skin Wounds and Trauma (SWaT) Research Network, RCSI
2014, 2019 – Present	Biomedical Engineering Society
2014 – Present	Anatomical Society
2015 – Present	Controlled Release Society
2007, 2013 – 2019	Materials Research Society
2015 – 2017	Tissue Engineering and Regenerative Medicine International Society

PROFESSIONAL SERVICE (SELECT)**National/Internal**

2018 – Present	RCSI Student Engagement and Partnership Committee Member
2018 – Present	RCSI Department of Anatomy and Regenerative Medicine Athena SWAN Departmental Champion
2015 – 2018	RCSI Athena SWAN Committee (Accreditation for commitment to gender equity and cultural diversity).
2016 – Present	Gastrointestinal Biology Module Co-ordinator (multi-departmental course in 1 st year medicine)
2017 – Present	Vice-Chair, Animal Research Facility committee RCSI.
2017	Judge of Engineers Ireland Biomedical Research Medal for Best Irish Bioengineering PhD Thesis

International

2019	External Examiner PhD Thesis Viva at: University of Birmingham
2018	Hosted Fulbright Scholar Prof. Carlos Castro (Ohio State University) in the Kearney Lab
2018	Session Chair, World Congress of Biomechanics
2018	External Examiner PhD Thesis Viva at: Bristol University, Queens University Belfast
2017	Session Chair, Controlled Release Society, World Congress
2015	Guest Editor for Tissue Engineering. "Special Collection on Skin Wound Healing Technologies"
2015	Tissue Engineering and Regenerative Medicine International Society World Congress, Student and Young Investigator Section Poster Competition Co-Organizer & Judge
2015	Tissue Engineering Young Investigator Council, Editorial Board

Sample Peer Reviewing (~10/yr): Advanced Materials, Nature Comms, Nature 2D, Biomaterials, Small, Am Chem Soc, Tiss Eng, Biomacromolecules, Langmuir, J Mat Chem C, J Cont Rel, RSC Advances, ACS Biomaterials Sc & Eng

Media Coverage (Select)

- RTÉ (Irish National Public Broadcaster) Radio interview: "The present and future for nanomedicine". 27th Jun. 2019
- RTÉ (Irish National Public Broadcaster) Evening News and website: "Scientists say new biomaterial may be capable of regenerating tissue". 9th March 2018
- www.diabetes.co.uk: "Irish Researcher receives major grant to develop foot ulcer device." 20th Sep. 2017
- Irish Times Newspaper: "DNA origami puts a smile on researchers' faces." 1st Sep. 2016
- www.nature.com/scibx : "Cross-linked hydrogels for ultrasound-induced drug delivery." Scibx 7(30). 7th Aug. 2014

PUBLICATIONS

Total publications = 26	Citations (11/14/2019) = 1189	h-index = 17	i10-index = 17
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Google Scholar Link: <https://scholar.google.com/citations?user=BDNcODIAAAAJ&hl=en&oi=ao>

SCOPUS Link: <https://www.scopus.com/authid/detail.uri?authorId=48662504100>

Example Publications:

- do Amaral, R., Cavanagh, B., O'Brien, F.J., Kearney, C.J. Platelet-Derived Growth Factor Stabilises Vascularisation in Collagen-Glycosaminoglycan Scaffolds In Vitro. *Journal of Tissue Engineering and Regenerative Medicine*, 13(2) (**2019**).
- Ryan, E.J.,..., Kearney, C.J., O'Brien, F.J. Collagen Scaffolds Functionalised With Copper-Eluting Bioactive Glass Reduce Infection And Enhance Osteogenesis and Angiogenesis In Vitro and In Vivo. *Biomaterials* (Submitted).
- Ryan, A., Kearney, C.J.,..., Schenke-Layland, K., Coleman, J.N., O'Brien, F.J. Electroconductive Biohybrid Collagen/Pristine Graphene Composite Biomaterials with Enhanced Biological Activity. *Advanced Materials*, 30(15):1706442 (**2018**).
- Gilroy, D.A., Hobbs, C., Nicolosi, V., Buckley, C.T., O'Brien, F.J., Kearney, C.J. Development of magnetically active scaffolds as intrinsically-deformable bioreactors. *MRS Communications*, 7 (3):367 (**2017**).
- Kearney, C.J., Lucas, C.R., O'Brien, F.J., Castro, C.E. DNA Origami: Folded DNA-Nanodevices That Can Direct and Interpret Cell Behavior. *Advanced Materials*, 28(27): 5509 (**2016**).
- Kearney, C. J. ⁺, Skaat, H. ⁺, Kennedy, S. M., Hu, J., Darnell, M., Raimondo, T. M., and Mooney, D. J. Switchable Release of Entrapped Nanoparticles From Alginate Hydrogels. *Advanced Healthcare Materials*, 4(11): 1634 (**2015**). **+Authors contributed equally to this work.**
- Huebsch, N.⁺, Kearney, C. J.⁺, Zhao, X.⁺, Kim, J., Cezar, C., Suo, Z., Mooney, D. J. Switchable Drug Delivery via ultrasound-triggered disruption and self-healing of reversibly-crosslinked hydrogels. *Proceedings of the National Academy of Sciences*, 111(27): 9762 (**2014**). **+Authors contributed equally to this work.**
- Brudno, Y., Silva, E. A., Kearney, C. J., Lewin, S., Aizenberg, M., Mooney, D. J. Reloading drug eluting gels through the bloodstream. *Proceedings of the National Academy of Sciences*, 111 (35): 12722 (**2014**).
- Kearney C. J., Mooney, D. J. Insight: Macroscale Delivery Systems for Molecular and Cellular Payloads. *Nature Materials*, 12: 1004 (**2013**).
- Kearney C. J., Hsu, H.-P., Spector, M. The Use of Extracorporeal Shock Wave-Stimulated Periosteum for Orthotopic Bone Generation. *Tissue Engineering Part A*, 18(13): 1500 (**2011**).

PRESENTATIONS

Peer-reviewed presentations= 36 talks and 29 posters	Presenting author = 21	Last author = 30	Invited talks = 11
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Example Presentations:

- F. Santarella, R. Sridharan, M. Marinkovic, R.J. do Amaral, B. Cavanagh, A. Smith, F.J. O'Brien, J. Garlick, C.J. Kearney. Next Generation Scaffolds: Induced Pluripotent Stem Cell-derived Matrix for Diabetic Foot Ulcer treatment. Materials Research Society. Boston, USA, Dec. 1st - 6th 2019 (Podium)
- C. J. Kearney, R. do Amaral, T. Ahmed, F. O'Brien "Functionalising a collagen-based scaffold with on-demand drug delivery for diabetic wound healing." World Congress of Biomechanics, Dublin, Ireland, 8th - 12th Jul. 2018. (Podium Talk)
- R. Sridharan, T. Ahmad, J. Garlick. C. J. Kearney. "BONDS: A Bilayered On-Demand Delivery Scaffold from iPS-cell Matrix." GRC: Signal Transduction by Engineered Extracellular Matrices. New Hampshire, Jul 22rd - 27th 2018. (Poster)
- C. J. Kearney, R. Sitram, F. J. O'Brien. "Towards a Diabetic Wound Healing Scaffold Capable of On-Demand Delivery." Materials Research Society, Boston, 27th Nov – 2nd Dec. 2016. (Podium Talk)
- C. J. Kearney, H. Skaat, S. M. Kennedy, M. Darnell, T. M. Raimondo, D. J. Mooney. "Delivering Nanoparticles On-Demand for Precise Temporal Presentation of Bioagents." Materials Research Society, Boston, 1st – 4th Dec. 2015. (Podium Talk)
- C. J. Kearney, N. Huebsch, X. Zhao, J. Kim, Z. Su, D. J. Mooney. "On-Demand Drug Delivery Using Ultrasound-Triggered Disruption of Reversibly-Crosslinked Hydrogels" Biomedical Engineering Society, Seattle, 28th Sept. 2013. (Podium Talk)
- C. J. Kearney, H.-P. Hsu, and M. Spector. "Extracorporeal Shock Wave-Stimulated Periosteum for Orthotopic Bone Generation." Orthopaedic Research Society, San Francisco, 6th Feb. 2012. (Podium Talk)

PATENTS

- Y. Brudno, C. J. Kearney, E. A. Silva, M. Aizenberg, B. Kwee, R. Desai, N. S. Joshi, D. J. Mooney. Refillable Drug Delivery Devices and Methods of Use Thereof. WO/2015/154082. International Application No.: PCT/US2015/024540. Filing Date: 06.04.2015. Publication Date: 08.10.2015
- C. J. Kearney, S. M. Kennedy, and D. J. Mooney. 2013. Controlled Nanoparticle Release. U.S. Provisional Patent Application No. 002806-78530-P, filed August 2013 (under review)
- C. J. Kearney, U. Tsedev, D. Mooney, A. Veves, S. Bencherif, T. Braschler. Prefabricated Alginate-Drug Bandages. U.S. Provisional Patent Application No. 61/810/854, filed April 2013 (under review)

FULL PUBLICATION LISTING

1. do Amaral, R.J.F.C., Zayed, N.A., Pascu, E.I., Cavanagh, B., Hobbs, C., Santarella, F., Simpson, C.R., Murphy, C.M., Sridharan, R., González-Vázquez, A., O'Sullivan, B., O'Brien, F.J., **Kearney, C.J.** " Functionalising collagen-based scaffolds with platelet-rich plasma for enhanced skin wound healing potential." *Frontiers in Bioengineering and Biotechnology*, (Accepted)*
2. do Amaral, R., Cavanagh, B., O'Brien, F.J., Kearney, C.J. Platelet-Derived Growth Factor Stabilises Vascularisation in Collagen-Glycosaminoglycan Scaffolds In Vitro. *Journal of Tissue Engineering and Regenerative Medicine*, 13(2) **(2019)**.
3. Ryan, E. J., Ryan, A. J., Philippart, A., Ciraldo, F. E., Hobbs, C., Nicolosi, V., Boccaccini, A. R., Kearney, C. J., O'Brien, F. J. Collagen Scaffolds Functionalised With Copper-Eluting Bioactive Glass Reduce Infection And Enhance Osteogenesis and Angiogenesis In Vitro and In Vivo. *Biomaterials*, 197 **(2019)**.
4. Nikravesh, N., Moakes, R. J. A., Azoidis, I., Davies, O. W., Kearney, C. J., Eisenstein, N. C., Grover, L. C., and Cox, S. C. Physical Structuring of Injectable Polymeric Systems to Controllably Deliver Nanosized Extracellular Vesicles. *Advanced Healthcare Materials*, 8 **(2019)**.
5. Ryan, A.J., Kearney, C.J., Shen, N., Khan, U., Kelly, A.G., Probst, C., Brauchle, E., Biccai, S., Garcarena, C.D., Vega-Mayoral, V., Loskill, P., Kerrigan, S.W., Kelly, D.J., Schenke-Layland, K., Coleman, J.N., O'Brien, F.J.. Electroconductive Biohybrid Collagen/Pristine Graphene Composite Biomaterials with Enhanced Biological Activity. *Advanced Materials*, 30(15) **(2018)**.
6. Sridharan, R., Ryan, E. J., Kearney, C. J., Kelly, D. J., O'Brien, F. J. Macrophage polarization in response to collagen scaffold stiffness is dependent on crosslinking agent used to modulate the stiffness. *ACS Biomaterials Science & Engineering*, 5(2) **(2018)**.
7. Kavanagh, N., Ryan, E.J., Widaa, A., Sexton, G., Fennell, J., O'Rourke, S., Cahill, K.C., Kearney, C.J., O'Brien, F.J., Kerrigan, S.W. Staphylococcal Osteomyelitis: Disease Progression, Treatment Challenges, and Future Directions. *Clinical Microbiology Reviews*, 31(2) **(2018)**.
8. Gilroy, D.A., Hobbs, C., Nicolosi, V., Buckley, C.T., O'Brien, F.J., Kearney, C.J. Development of magnetically active scaffolds as intrinsically deformable bioreactors. *MRS Communications*, 1(8) **(2017)**.
9. de Oliveira, F.C.S., Olvera, D., Sawkins, M.J., Cryan, S.-A., Kimmins, S.D., da Silva, T.E., Kelly, D.J., Duffy, G.P., Kearney, C.J., Heise, A. Direct UV-Triggered Thiol-ene Cross-Linking of Electrospun Polyester Fibers from Unsaturated Poly (macrolactone)s and Their Drug Loading by Solvent Swelling. *Biomacromolecules*, 18(12) **(2017)**.
10. do Amaral, R.J.F.C., Almeida, H.V., Kelly, D.J., O'Brien, F.J., Kearney, C.J. Infrapatellar fat pad stem cells: from developmental biology to cell therapy. *Stem Cells International*, **(2017)**.
11. Kearney, C.J., Pandit, A. Special Collection: Closing the Gaps in Skin Wound Healing. *Tissue Engineering Part A*. 22 (5-6): 401 **(2016)**.
12. Kearney, C.J., Lucas, C.R., O'Brien, F.J., Castro, C.E. DNA Origami: Folded DNA-Nanodevices That Can Direct and Interpret Cell Behavior. *Advanced Materials*. 28(27): 5509 **(2016)**.
13. Kennedy, S., Hu, J., Kearney, C. J., Skaat, H., Gu, L., Gentili, M., Vandenburg, H. Mooney, D.J. Sequential Release of Nanoparticle Payloads From Ultrasonically Burstable Capsules. *Biomaterials* 75: 91 **(2015)**.
 - Highlighted in news for Materials Today. Polymer capsules deliver nanoparticles on time. 28 October 2015. <http://www.materialstoday.com/biomaterials/news/polymer-capsules-deliver-nanoparticles-on-time/>
14. Kearney, C. J. +, Skaat, H. +, Kennedy, S. M., Hu, J., Darnell, M., Raimondo, T. M., and Mooney, D. J. Switchable Release of Entrapped Nanoparticles From Alginate Hydrogels. *Advanced Healthcare Materials*, 4(11): 1634 **(2015)**.

+Authors contributed equally to this work.

 - Highlighted on medgadget.com. "On-Demand Delivery of Drugs from Nanoparticles Using Ultrasound. June 18th 2015." <http://www.medgadget.com/2015/06/demand-delivery-drugs-nanoparticles-using-ultrasound.html>
15. Leal, E. C, Carvalho, E., Tellechea, A., Kafanas, A., Tecilazich, F., Kuchibhotla, S., Auster, M. E., Kokkotou, E., Kearney, C. J., Mooney, D. J., LoGerfo, F.W., Pradhan Nabzdyk, L., Veves, A. Substance P Promotes Wound Healing in Diabetes by Modulating Inflammation and Macrophage Phenotype. *The American Journal of Pathology*, 185(6): 1638 **(2015)**.
16. Sridharan, R, Cameron, A. R., Kelly, D. J., Kearney, C. J., O'Brien, F. J. Biomaterial Based Modulation of Macrophage Polarization: a Review and Suggested Design Principles. *Materials Today*, 18(6): 313 **(2015)**.
17. Maione, A.G., Brudno, Y., Stojadinovic, O., Park, L. K., Smith, A., Tellechea, A., Leal, E.C., Kearney, C.J., Veves, A., Tomic-Canic, M., Mooney, D.J., Garlick, J.A. 3D human tissue models that incorporate diabetic foot ulcer-derived fibroblasts mimic in vivo features of chronic wounds. *Tissue Engineering Part C*, 21 (5): 499 **(2015)**.
18. Huebsch, N.+ , Kearney, C. J.+, Zhao, X.+ , Kim, J., Cezar, C., Suo, Z., Mooney, D. J. Switchable Drug Delivery via ultrasound-triggered disruption and self-healing of reversibly-crosslinked hydrogels. *Proceedings of the National Academy of Sciences*, 111(27): 9762 **(2014)**.

+Authors contributed equally to this work.

- Highlighted in nature.com/scibx. "Cross-linked hydrogels for ultrasound-induced drug delivery." Scibx 7(30); doi:10.1038/scibx.2014.909
 - Article about work on dotmed.com. "On demand chemotherapy with self-healing hydrogel", June 26, 2014. <http://www.dotmed.com/news/story/23737>
19. Brudno, Y., Silva, E. A., Kearney, C. J., Lewin, S., Aizenberg, M., Mooney, D. J. Reloading drug eluting gels through the bloodstream. *Proceedings of the National Academy of Sciences*, 111 (35): 12722 **(2014)**.
 - Highlighted in Nature Nanotech "Drug delivery: Replenishing reservoirs in vivo", Nature Nanotechnology 9, 874–875 (2014) doi:10.1038/nnano.2014.253
 - Highlighted as Editor's choice in Science. "A complimentary refill, yes please" Science 12 September 2014: Vol. 345 no. 6202 pp. 1307-1308. DOI: 10.1126/science.345.6202.1307-g
 20. Shvartsman, D., Storrie-White, H., Lee, K., Kearney, C. J., Brudno, Y., Ho, N., Cezar, C. A., McCann, C. M., Anderson, E., Koullias, J., Tapia, J. C., Vandenburg, H., Lichtman, J. W., Mooney, D. J. Sustained delivery of VEGF maintains innervation and promotes reperfusion in ischemic skeletal muscles via NGF/GDNF signaling. *Molecular Therapy*, 22(7):1243 **(2014)**.
 21. Kearney C. J., Mooney, D. J. Insight: Macroscale Delivery Systems for Molecular and Cellular Payloads. *Nature Materials*, 12: 1004 **(2013)**.
 22. Kearney C. J., Hsu, H.-P., Spector, M. The Use of Extracorporeal Shock Wave-Stimulated Periosteum for Orthotopic Bone Generation. *Tissue Engineering Part A*, 18(13): 1500 **(2012)**.
 23. Foldager, C. B., Kearney, C. J., Spector, M. Clinical Application of Extracorporeal Shock Wave Therapy in Orthopedics: Focused versus Unfocused Shock Waves. *Ultrasound in Medicine and Biology*, 38(10): 1673 **(2012)**.
 24. Kearney C. J., Padera, R.F., Hsu, H.-P., Spector, M. Extracorporeal Shock Wave-Induced Proliferation of Periosteal Cells In Vivo. *Journal of Orthopaedic Research*, 29(10): 1536 **(2011)**.
 25. Zhang, D., Kearney, C. J., Cheriyan, T., Hsu, H.-P., and Spector, M. Extracorporeal Shock Wave Induced Expression of Lubricin in Tendons and Septa. *Cell and Tissue Research*, 346(2): 255 **(2011)**.
 26. Kearney, C.J., Zhao, Z., Bruet, B.J.F., Radovitzky, R., Boyce, M. C., and Ortiz, C. Nanoscale anisotropic plastic deformation in single crystal aragonite. *Physical Review of Letters*, 96: 255505 **(2006)**.