

1. **Name:** Eda D. Yildirim-Ayan
2. **Education – degrees, discipline, institution, year:**
Ph.D. in Mechanical Engineering, Drexel University, 2010
M.S. in Mechanical Engineering, Izmir Institute of Technology, Turkey, 2005
B.S. in Mechanical Engineering, Ege University, Turkey, 2001
3. **Academic Experience**
06/2018 – present Associate Professor, Dept. of Bioengineering, University of Toledo
12/2010 – 06/2018, Assistant Professor, Dept. of Bioengineering, University of Toledo
12/2010 – present, Director of Engineered Bio-system Laboratory (EBSL), University of Toledo
04/2005 – 05/2010, Graduate Assistant, Dept. of Mechanical Engineering, Drexel University
02/2002 – 02/2005, Graduate Assistant, Dept. of Mechanical Engineering, Izmir Institute of Technology
4. **Current membership in professional organizations:**
American Society of Mechanical Engineers
Orthopaedic Research Society (ORS)
Biomedical Engineering Society (BMES)
5. **Honors and Awards:**
[1] Outstanding Undergraduate Mentor Award, University of Toledo, 2017
[2] Graduate Student Research Award at Drexel, Drexel University, 2009
[3] Mimics Innovation Awards in 2nd place for International Competition in Innovative Engineering Solutions in Medicine, 2009
[4] Outstanding Graduate Research Award for Academic Merit, Department of Mechanical Engineering and Mechanics, Drexel University, 2008-2009
[5] Graduate Student Travel Award Drexel University, May 2008 and June 2009
[6] George Hill Graduate Fellowship for Academic Achievement, 2007- 2008
[7] BP Young Scientists and Students Award (YSSA), October 2008
6. **Service Activities (University and Professional)**
[1] ENCAP Bioengineering Representative (July 18-present)
[2] Advisory Council for Undergraduate Research Member (2017-Present)
[3] Bioengineering Faculty Search Committee Member (Dec 18-May 19)
[4] Outreach Activities (2011-2014) through EXCELing into Engineering and Latino Youth Summit programs
[5] Chair of Clinical Immersion Co-Op Program Initiative (2017)
[6] Member of Multiple Ph.D. and M.S. Committees (2014 – Present) -10 students
[7] Chair (Nationwide) at ASME Manufacturing Engineering Division (MED)- Biomanufacturing Technical Committee (July 2015-July 2017)
[8] NSF Panel Reviewer, 2012 – present
[9] NIH Panel Reviewer (Musculoskeletal Tissue Engineering Study Section), 2016.
[10] Journal Article Reviewer for: ACS Applied Materials and Interface, Materials, Biofabrication, Nanotechnology, Applied Physics Letter, BioMed Research International, Biomedical Materials, Journal of Applied Physics, Biomaterials, Tissue Engineering A.
7. **Selected Publications:**
[1] Subramanian G., Stasuk A., Elsaadany M., Yildirim-Ayan E., "Effect of Uniaxial Tensile Cyclic Loading Regimes on Matrix Organization and Tenogenic Differentiation of Adipose-Derived Stem Cells Encapsulated within 3D Collagen Scaffolds", Stem Cells International, Volume 2017, DOI:10.1155/2017/6072406, 2017.
[2] Elsaadany M., Winter K., Adams S., Stasuk A., Ayan H., Yildirim-Ayan E., "Equiaxial Strain Modulates Adipose-derived Stem Cell Differentiation within 3D Biphasic Scaffolds towards Annulus Fibrosus" Nature, Scientific Reports, Volume 7: 12868, DOI:10.1038/s41598-017-13240-3
[3] Elsaadany M., Chang Y.K., Yildirim-Ayan E., "Predicting Cell Viability within Tissue Scaffolds under Equiaxial Strain: Multi-scale Finite Element Model of Collagen-Cardiomyocytes Constructs" Biomechanics and Modeling in Mechanobiology, DOI: 10.1007/s10237-017-0872-z, 2017.
[4] Subramanian G., Elsaadany M., Yildirim-Ayan E., "Creating Homogenous Strain Distribution within 3D Cell-encapsulated Constructs Using a Simple and Cost-effective Uniaxial Tensile Bioreactor: Design and Validation Study", Biotechnology and Bioengineering, DOI: 10.1002/bit.26304, 2017.

- [5] Elsaadany M., Harris M., Yildirim-Ayan E., "Design and Validation of Equiaxial Mechanical Strain Platform, EQUicycler, for 3D Tissue Engineered Constructs", *BioMed Research International*, DOI:10.1155/2017/3609703, (INVITED ARTICLE),2017.
- [6] Karki S., Eisenmann K., Yildirim-Ayan E., Ayan H., "Miniature Dielectric Barrier Discharge Non-thermal Plasma Induces Apoptosis in Lung Cancer Cells and Inhibits Cell Migration", *BioMed Research International*, DOI:10.1155/2017/8058307, 2017.
- [7] Karki S., Gupta T. T, Eisenmann K., Yildirim-Ayan E., Ayan H., "Investigation of non-thermal plasma effects on lung cancer cells within 3D collagen matrices", *Journal of Physics D: Applied Physics*, Volume 50, Number 31, 2017.
- [8] Trumbull A., Subramanian G., Yildirim-Ayan E., "Mechanoresponsive Musculoskeletal Tissue Differentiation of Adipose-Derived Stem Cells: A Review", *Biomedical Engineering Online*, Vol.15, Issue 43, 2016.
- [9] Elsaadany M., Subramanian G., Ayan H., Yildirim-Ayan E., "Exogenous nitric oxide (NO) generated by NO-plasma treatment modulates osteoprogenitor cells early differentiation," *Journal of Physics D: Applied Physics*, Vol. 48, 2015.
- [10] Subramanian G., Bialorucki C., Yildirim-Ayan E., "Nanofibrous yet Injectable Polycaprolactone-Collagen Bone Tissue Scaffold with Osteoprogenitor Cells and Controlled Release of Bone Morphogenetic Protein-2", *Material Science and Engineering C*, Vol. 51, 2015.
- [11] Bialorucki C., Subramanian G., Elsaadany M., Yildirim-Ayan E., "In Situ Osteoblast Mineralization Mediates Post-Injection Mechanical Properties of Osteoconductive Material ", *Journal of the Mechanical Behavior of Biomedical Materials*. Volume 38, 2014.
- [12] Baylan N., Bhat S., Ditto M., Lawrence JG., Lecka-Czernik B., Yildirim-Ayan E., "Polycaprolactone Nanofiber Interspersed Collagen Type-I Scaffold for Bone Regeneration: A Unique Injectable Osteogenic Scaffold", *Biomedical Materials*, Vol.8, 2013 (FEATURED ARTICLE and EDITOR'S PICK)
- [13] Agarwal A., Palepu V., Agarwal AK., Goel VK., Yildirim-Ayan E., "Biomechanical evaluation of an endplate-conformed polycaprolactone-hydroxyapatite intervertebral fusion graft and its comparison with a typical non-conformed cortical graft", *Journal of Biomechanical Engineering*, Vol.135, 2013.
- [14] Ayan H., Yildirim-Ayan E., Pappas D., and Sun W., "Development of a cold atmospheric pressure microplasma jet for freeform cell printing", *Applied Physics Letter*, Vol 99, 2011.
- [15] Yildirim-Ayan E., Pappas D., Guceri S., and Sun W., "Enhanced cellular functions on polycaprolactone tissue scaffolds by O₂ plasma surface modification", *Plasma Processes and Polymers*, Vol.8, 2011.
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- [17] Yildirim E.D., Ayan H., Vasilets V.N., Fridman A., Guceri S., Sun W., "Effect of Dielectric Barrier Discharge Plasma on the Attachment And Proliferation of Osteoblasts Cultured over Poly (ϵ -Caprolactone) Scaffolds", *Plasma Processes and Polymers*, Vol.5, 2008.
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- [21] Yildirim E.D., Ozerdem B., "A Numerical Simulation Study for the Human Passive Thermal System", *Energy and Buildings*, Vol.40, 2008.
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- [23] Ozdamar A., Ozbalta N., Akin A., Yildirim E.D., "An Application of a Combined Wind and Solar Energy System in Izmir" *Renewable and Sustainable Energy Reviews*, Vol.9, 2005.