Ayşegül Kavas, Ph.D.

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EDUCATION

- **Ph.D.** (2007 - 2014) **C.GPA:** 3.50/4.00
  Middle East Technical University, Department of Engineering Sciences, Ankara, Turkey
  Thesis title: Raloxifene Delivery Systems for Osteoporosis Treatment

- **M.Sc.** (2005 - 2007) **C.GPA:** 3.64/4.00
  Middle East Technical University, Department of Engineering Sciences, Ankara, Turkey
  Thesis title: Evaluation of Effectiveness of Different Bioactive Agents for Treatment of Osteoarthritis with In Vitro Model under Dynamic Mechanical Stimulation

- **B.Sc.** (1999 - 2003) **C.GPA:** 3.05/4.00
  Middle East Technical University, Department of Chemical Engineering, Ankara, Turkey
  (Graduated as honor student)

- **High School** (1995 - 1998) **C.GPA:** 4.86/5.00
  Ankara Atatürk Anatolian High School, Ankara, Turkey

ACADEMIC & OCCUPATIONAL EXPERIENCES

- **Instructor Dr.** (February 2018 - present)
  Çankaya University, Faculty of Engineering, Department of Materials Science & Engineering, Ankara, Turkey

- **R&D engineer** (February 2018 - present)
  Bimetron Biotechnology Medical Electronic Engineering Industry & Commerce Ltd. Company, Ankara, Turkey

- **Instructor Dr.** (October 2015 - January 2016)
  Başkent University, Faculty of Engineering, Ankara, Turkey

- **Research and teaching assistant** (January 2005 - December 2013)
  Middle East Technical University, Department of Engineering Sciences, Ankara, Turkey

  In addition to fulfilling course responsibilities, actively contributed to the foundation, expansion and continuous maintenance of the Biomaterials Research Laboratory of the Department of Engineering Sciences at Middle East Technical University.

- **Intern** (August 2002)
  Anadolu Refinery Inc. Co., Mersin, Turkey
- **Intern** (August 2001)
  Sugar Factory, Production and Laboratory Department, Ankara, Turkey

COURSES TAUGHT

- MSE 428 - Materials for Biomedical Applications (2017 - 2018 spring semester, Çankaya University, Faculty of Engineering, Department of Materials Science & Engineering, Ankara, Turkey)
  The course has been conducted in English.
- KİM 110 - General Chemistry (2015 - 2016 fall semester, Başkent University, Faculty of Engineering, Ankara, Turkey)
  The course was conducted in English.
- KİM 116 - General Chemistry Laboratory (2015 - 2016 fall semester, Başkent University, Faculty of Engineering, Ankara, Turkey)

RESEARCH INTERESTS

- Biomaterials
- Polymeric controlled release systems
- Tissue engineering
- Stem cells & chondrocytes
- Biomechanics (osteoarthritis)

PUBLICATIONS (SCI & SCIE)

- **Kavas A.**, Keskin D., Altunbaş K., Tezcaner A. Raloxifene-/raloxifene-poly(ethylene glycol) conjugate-loaded microspheres: A novel strategy for drug delivery to bone forming cells. *International Journal of Pharmaceutics*. 2016; 510(1): 168-183.
- **Kavas A.**, Cagatay S.T., Banerjee S., Keskin D., Tezcaner A. Potential of Raloxifene in reversing osteoarthritis-like alterations in rat chondrocytes: an in vitro model study. *Journal of Biosciences*. 2013; 38(1): 135-147.
- **Kavas A.**, Özdemir M., Gürses S., Keskin D., Tezcaner A. In vitro investigation and biomechanical modeling of the effects of PLF-68 on osteoarthritis in a three-dimensional model. *Biomechanics and modeling in mechanobiology*. 2011; 10(5): 641-650.

- Akpinar O., Ak O., **Kavas A.**, Bakir U., Yilmaz L. Enzymatic production of xylooligosaccharides from cotton stalks. *Journal of Agricultural and Food Chemistry*. 2007; 55: 5544-5551.

FORTHCOMING PUBLICATION

- **Kavas A.**, Özdemir M., Erdemli Ö., Gürses S., Keskin D., Tezcaner A. In vitro and biomechanical evaluation of effects of BMP9, Raloxifene and PLF68 combinations on osteoarthritis (currently in the process of being prepared).

CONFERENCE PROCEEDINGS

- Özden Akkaya Ö., Altunbaş K., Yağcı A., Yaprakçı M.V., Kibria A.S.M.G., **Kavas A.**, Kayabölen A. Sığır yağ doku kaynaklı kök hücreler ile hücreleri uzaklaştırılmış yağ dokusu ve fibroini içine alan hidrojel doku iskelesi (Hydrogel scaffold comprising bovine adipose derived stem cells, decellularized adipose tissue and fibroin). *Uluslararası Katılımlı XIII. Ulusal Histoloji ve Embriyoloji Kongresi (XIII. National Congress of Histology and Embryology with International Participation)*, İzmir-Turkey, April 30-May 3, 2016 (Poster presentation).

- **Kavas A**., Özdemir M., Erdemli Ö., Gürses S., Keskin D., Tezcaner A. Combinational effects of BMP9, Raloxifene and Pluronic F-68 on OA-like chondrocytes. *3rd TERMIS (Tissue Engineering and Regenerative Medicine International Society) World Congress 2012*, Vienna-Austria, September 5-8, 2012 (Poster presentation).*****

- **Kavas A.**, Tuncay S., Keskin D., Banerjee S., Tezcaner A. Effects of Raloxifene on matrix synthesis of osteoarthritis-like chondrocytes. *Pharmaceutical Sciences for the Future of Medicines*, Prague-Czech Republic, June 13-17, 2011 (Poster presentation).

- **Kavas A.**, Özdemir M., Gürses S., Keskin D., Tezcaner A. Investigation of effect of PLF-68 on osteoarthritic chondrocytes embedded in agarose and Kelvin model development for further analysis. *International Symposium on Biotechnology: Developments and Trends*, Ankara-Turkey, September 27-30, 2009 (Poster presentation).

- **Kavas A.**, Tezcaner A., Keskin D. Investigation of Raloxifene effects on osteoarthritic chondrocytes in a three dimensional in vitro model. *15th Cirmib Biomaterials School and Expertissues School & Workshop*, Ischia Porto (NA)-Italy, July 7-11, 2008 (Oral & poster presentation).******

***** Abstract was also published in *Journal of Tissue Engineering and Regenerative Medicine* (SCIE) (2012; 6(Suppl. s1): 73).

****** The presentation was also performed orally in Turkish at *13. Biyomedikal Mühendisliği Ulusal Toplantısı (13. National Meeting of Biomedical Engineering)*, Ankara-Turkey, May 29-31, 2008.

- **Kavas A.**, Tezcaner A., Gürses S., Keskin D. Therapeutic potential of PLF-68 on osteoarthritis. *14th Biomedical Science & Technology Symposium*, Muğla-Turkey, May 3-7, 2008 (Poster presentation).
- Akpınar Ö., Erdoğan K., Ak Ö., **Kavas A.**, Bakır U., Yılmaz L. Lignoselülozik materyallerden kontrollü asit hidrolizi ile ksilooligosakkarit üretimi (Xylooligosaccharide production from lignocellulosic materials by controlled acid hydrolysis). *XV. Ulusal Biyoteknoloji Kongresi (XV. National Congress of Biotechnology)*, Antalya-Turkey, October 28-31, 2007 (Poster presentation).

WORKSHOPS/SUMMER SCHOOLS/CONFERENCES/SYMPOSIUMS ATTENDED

- *21. Biyomedikal Mühendisliği Ulusal Toplantısı (21. National Meeting of Biomedical Engineering)*, İstanbul-Turkey, November 24-26, 2017.
- *3D Tasarım ve Basım Teknikleri Çalıştayı (3D Design and Printing Techniques Workshop),* İstanbul-Turkey, November 24, 2017.
- *Biyotasarım Çalıştayı (Biodesign Workshop),* İstanbul-Turkey, November 24, 2017.
- *3D Biyoarayüzler & Biyoterapötikler Çalıştayı (3D BioInterfaces & BioTherapeutics Workshop)*, İzmir-Turkey, October 26-27, 2017.
- *11th Nanoscience and Nanotechnology Conference*, Ankara-Turkey, June 22-25, 2015.
- *"Tasarımdan Üretime Biyomalzemenin Öyküsü" Çalıştayı ("Biomaterial Story from Design to Production" Workshop)*, Ankara-Turkey, December 16, 2013.
- *"Biyomalzemelerin Medikal Alanda Kullanımı" Çalıştayı ("Usage of Biomaterials in the Medical Field" Workshop)*, Ankara-Turkey, March 19, 2013.
- *17th International Biomedical Science & Technology Symposium*, Ankara-Turkey, November 23-25, 2011.
- *II. Kök Hücre Kursu ve VI. Kök Hücre Sempozyumu (II. Stem Cell Course and VI. Stem Cell Symposium)*, Ankara-Turkey, June 24-25, 2011.
- *3rd Summer School on "Advanced Topics in Cell Model Systems"*, Tor Vergata Research Establishment of National Research Council of Italy, Rome-Italy, June 5-10, 2011.

LABORATORY SKILLS

- Preparation of polymer-based microspheres for controlled drug (raloxifene) release
- Determination of raloxifene encapsulation efficiency and raloxifene release profile of the microspheres by UV-visible spectroscopy

- Preparation of raloxifene-PEG conjugate
- Fourier transform infrared spectroscopy
- High performance liquid chromatography
- Isolation of stem cells from rat bone marrow and adipose tissue, and chondrocytes from human and rat cartilage
- Cell culture techniques (stem cell, chondrocyte, osteoblast & Saos-2 cultures)
- Light and phase contrast microscopies
- Development of in vitro 3D osteoarthritis model (encapsulation of articular chondrocytes into agarose to obtain agarose-chondrocyte discs and treatment of the chondrocytes with 5-azacytidine)
- Unconfined compression stress relaxation test applied to agarose-chondrocyte discs
- Fibroin extraction from silkworm cocoons
- Decellularization and solubilization of bovine and rat adipose tissue
- Determination of cell viability and ALP activity as well as protein, glycosaminoglycan and collagen amounts by microplate spectroscopy
- Histochemical staining methods (collagen, glycosaminoglycan, Alizarin red S, etc.)
- Immunostaining methods (collagen type I & II)
- Nucleic acid extraction
- PCR amplification
- Gel electrophoresis
- Determination of DNA concentration by fluorometry

COMPUTER EXPERIENCES

- Microsoft Office programs (Word, PowerPoint & Excel)
- Adobe Acrobat Reader
- SPSS (Statistical Package for Social Sciences)
- ImageJ
- MATLAB

PROJECTS

- Preparation and Characterization of PLGA-PCL Nanospheres Targeted to Bone for Osteoporosis Treatment, Middle East Technical University-BAP, researcher, 2011-2012.
- Effect of Raloxifene on Gene Expression of Matrix Proteins in Osteoarthritis, Middle East Technical University-BAP, researcher, 2009-2010.

- Evaluation of Effects of Different Agents on Osteoarthritis Treatment under Stimulation of Dynamic-Static Loading in Cell Culture, The Scientific and Technological Research Council of Turkey, researcher, 2005-2007.

COURSES ASSISTED

- ES 202 - Mathematics for Engineers
- ES 301 - Numerical Methods in Engineering
- ES 303 - Statistical Methods for Engineers
- ES 361 - Computing Methods in Engineering
- ES 444 - Fundamentals of Tissue Engineering
- ES 704 - Tissue Engineering

FELLOWSHIP

- International Scientific Meetings Fellowship Program, The Scientific and Technological Research Council of Turkey, June 2011.

LANGUAGES

- Turkish (native language)
- English (fluent)
- German (basic)