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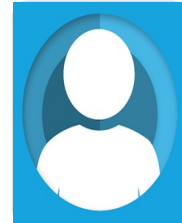
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رعنا ایمانی

استادیار

دانشکده مهندسی پزشکی

گروه آموزشی بیوماتریال



پایان نامه های کارشناسی ارشد

#	عنوان پایان نامه	توسط	تاریخ دفاع
1	سنتز و مشخصه یابی داربست نانو کامپوزیتی هیدروژل تزریق پذیر بر پایه زانتان حاوی نانوذره سیلیکون به منظور ترمیم استخوان	محمدصادق اقاچان زاده و رعنا ایمانی	مهر 1400
2	اصلاح سطح استنت با هدف بارگذاری دوگانه دارو به منظور جلوگیری از انسداد عروق و ترمیم بافت	طهورا ابراهیمی نوذری و رعنا ایمانی	مهر 1400
3	تهیه و مشخصه یابی غشای نانولیفی اصلاح شده بر پایه پلی لاکتاید با قابلیت رهایش دوگانه دارو جهت کاربرد به عنوان غشای GBR دندانی	هانیه شاکری و رعنا ایمانی	مرداد 1400
4	تاثیر پارامترهای رئولوژی بر چاپ پذیری هیدروژل آلژینات - ژلاتین و بررسی زنده مانی سلولی	مبینا بازاری و رعنا ایمانی	مرداد 1400
5	ساخت و مشخصه یابی پیج قلبی نانولیفی بر پایه ویژگی پیزوالکتریسیته با هدف بهبود ترمیم عضله قلب	بهاره دوستوندی و رعنا ایمانی	اسفند 1399
6	ساخت و مشخصه یابی سامانه های نانوکامپوزیتی بر پایه اکسید گرافن و اکسید گرافن کاهیده به عنوان هیدروژل تزریق پذیر برای کاربردهای مهندسی بافت	علیرضا نعمتی و رعنا ایمانی	خرداد 1399
7	اصلاح سطح ایمپلنت پایه تیتانیوم توسط روش اصلاح الکتروشیمیایی به منظور بهبود خواص اتصال استخوانی و آنتی باکتریال	فاطمه نوروزی و رعنا ایمانی	اسفند 1398
8	طراحی و ساخت لنز چشمی جهت رهایش هیالورونیک اسید به منظور بازسازی آسیب های لایه اپیتلیال قرنیه	الهام اکبری و رعنا ایمانی	بهمن 1398
9	بررسی رفتار سلولی تحت میدان الکترومغناطیسی در حالت کشت 2بعدی و 3بعدی	فرید خرمی نیا و رعنا ایمانی	تیر 1398
10	طراحی و ساخت داربست کامپوزیتی نانولیف/هیدروژل حاوی ذرات سیلیکون با قابلیت رهایش دارو برای مهندسی بافت استخوان	فرشته اوستادی و رعنا ایمانی	اسفند 1397

اسفند 1397	مهلا بهیاری و رعنا ایمانی	ساخت و ارزیابی زخم پوش الکتروریسی شده حاوی نانوحامل بارگذاری شده با داروی گیاهی به منظور تسریع بهبود زخم های دیابتی	11
بهمن 1397	شیرین نور و رعنا ایمانی	ساخت و بررسی داربست ترکیبی هیدروژل / نانو الیاف حاوی آلونته ورا جهت کاربرد در مهندسی بافت پوست	12
بهمن 1397	سیدمرتضی عطاری و رعنا ایمانی	ساخت و مشخصه یابی داربست کامپوزیتی تشکیل شونده در محل با قابلیت رهایش داروی آنورواستاتین جهت کاربرد در مهندسی بافت استخوان	13
مهر 1397	سیدروژه ریاضی مقدم ضیابری و رعنا ایمانی	ساخت و ارزیابی داربست مهندسی بافت غضروف بر پایه هیدروژل فیبرین و پلی لاکتیک اسید	14
بهمن 1396	بهباد بلندی و رعنا ایمانی	ساخت و مشخصه یابی هیدروژل بر پایه آلجینات حاوی پلاسما غنی از پلاکت جهت کاربرد در مهندسی بافت غضروف	15
آذر 1396	یاسمن محرابی و رعنا ایمانی	بررسی فاکتورهای رشد موثر بر مهاجرت سلولی با استفاده از سیستم های میکروفلوئیدیک به منظور مهندسی بافت پوست	16
مهر 1396	آذین سادات قاسمی و رعنا ایمانی	ساخت و ارزیابی نانوکامپوزیت رسانا بر پایه گرافن با روش الکتروریسی جهت کاربرد به عنوان پیچ قلبی	17

کتاب

#	عنوان	نگارندگان/مترجمان	کشور ناشر	تاریخ انتشار	نسخه
داده های ثبت شده در پورتال					
1	NANOENGINEERING IN MUSCULOSKELETAL REGENERATION- chapter 4: Nanotechnology in gene therapy for musculoskeletal regeneration	شیرین نور، بهباد بلندی، رعنا ایمانی	United States	1399	1
2	مقدمه ای بر زخم پوش های مهندسی شده جهت ترمیم بافت پوست: ترمیم با رویکرد افزایش رگزایی	رعنا ایمانی، شیرین نور	ایران	1398	1
3	چاپ زیستی در پزشکی بازساختی	رعنا ایمانی، علی مختارزاده بنه خلخال	ایران	1398	1
4	Handbook of Nanofibers; Chapter 34: Functional nanofiber for drug delivery applications	رعنا ایمانی، مریم یوسف زاده چیمه، شیرین نور	United States	1396	1
5	کشت سه بعدی سلول اصول و ورش ها	اسماعیل صدرالدینی، نفیسه بحیرائی، رعنا ایمانی، اکرم علیزاده، نوشین حقیقی پور، لیدا مرادی، آزاده نیکنام	ایران	1396	1
6	مقدمه ای بر مهندسی بافت : مبانی و کاربرد ها	علی محمد شریفی، رعنا ایمانی	ایران	1394	1

مقالات ژورنال

داده های ثبت شده در پورتال

- 1 Mahsa Khalili, Hamid Keshvari, Rana Imani, Alireza Naderi Sohi, Elaheh Esmaeili, Maryam Tajabadi, "Study of osteogenic potential of electrospun PCL incorporated by dendrimerized superparamagnetic nanoparticles as a bone tissue engineering scaffold", *POLYMERS FOR ADVANCED TECHNOLOGIES*, Vol. 0, Num. 0, Page 1-13, November 2021,
- 2 Azin Sadat Ghasemi, Elham Akbari, Rana Imani, "An Overview of Engineered Hydrogel-Based Biomaterials for Improved ?-Cell Survival and Insulin Secretion", *Frontiers in Bioengineering and Biotechnology*, Vol. 9, Num. 1, Page 1-24, August 2021,

- 3 Haniyeh Malektaj, Rana Imani, Mohammad Hossein Siadati, "Study of injectable PNIPAAm hydrogels containing niosomal angiogenetic drug delivery system for potential cardiac tissue regeneration", *BIOMEDICAL MATERIALS*, Vol. 16, Num. 4, Page 1-12, June 2021,
- 4 Elham Akbari, Rana Imani, Parvin Shokrollahi, Saeid Heidari Keshel, "Preparation of Nanoparticle-Containing Ring-Implanted Poly(Vinyl Alcohol) Contact Lens for Sustained Release of Hyaluronic Acid", *MACROMOLECULAR BIOSCIENCE*, Vol. 0, Num. 0, Page 1-12, May 2021,
- 5 Mahla Behyari, Rana Imani, Hamid Keshvari, "Evaluation of Silk Fibroin Nanofibrous Dressing Incorporating Niosomal Propolis, for Potential Use in Wound Healing", *FIBERS AND POLYMERS*, Vol. 0, Num. 0, Page 1-12, April 2021,
- 6 Fatemeh Sadat Mostafavi, Rana Imani, "Synthesis and characterization of Gelatin-functionalized Reduced Graphene Oxide for drug delivery application", , Vol. 23, Num. 5, Page 75-85, March 2021,
- 7 Razieh Najafloo, Nafiseh Baheiraei, Rana Imani, "Synthesis and characterization of collagen/calcium phosphate scaffolds incorporating antibacterial agent for bone tissue engineering application", *JOURNAL OF BIOACTIVE AND COMPATIBLE POLYMERS*, Vol. 1, Num. 1, Page 1-15, November 2020,
- 8 Behzad Bolandi, Rana Imani, Shahin Bonakdar, Hossein Fakhrazadeh, "Chondrogenic stimulation in mesenchymal stem cells using scaffold-based sustained release of platelet-rich plasma", *JOURNAL OF APPLIED POLYMER SCIENCE*, Vol. 138, Num. 12, Page 1-18, October 2020,
- 9 Behzad Bolandi, Rana Imani, Shahin Bonakdar, Hossein Fakhrazadeh, "Chondrogenic stimulation in mesenchymal stem cells using scaffold-based sustained release of platelet-rich plasma", *JOURNAL OF APPLIED POLYMER SCIENCE*, Vol. 1, Num. 1, Page 1-18, October 2020,
- 10 Shirin Nour, Rana Imani, G. Rasul Chaudhry, Ali Mohammad Sharifi, "Skin wound healing assisted by angiogenic targeted tissue engineering: A comprehensive review of bioengineered approaches", *JOURNAL OF BIOMEDICAL MATERIALS RESEARCH PART A*, Vol. 1, Num. 1, Page 1-26, September 2020,
- 11 Raziye Najafloo, Mahla Behyari, Rana Imani, Shirin Nour, "A mini-review of Thymol incorporated materials: Applications in antibacterial wound dressing", *JOURNAL OF DRUG DELIVERY SCIENCE AND TECHNOLOGY*, Vol. 60, Num. 1, Page 1-11, August 2020,
- 12 Sajedah Khorshidi Esfandabadi, Mahboobeh Mohebbali, Rana Imani, Mahboobeh Mahmoodi, Atefeh Solouk Mofrad, "Electrospun Fibroin/Graphene Oxide Nanocomposite Mats: an Optimization for Potential Wound Dressing Applications", *FIBERS AND POLYMERS*, Vol. 21, Num. 3, Page 480-488, March 2020,
- 13 Fereshteh Oustadi, Rana Imani, Masoumeh Haghbin Nazarpak, Ali Mohammad Sharifi, "Genipin-crosslinked gelatin hydrogel incorporated with PLLA-nanocylinders as abonescaffold:Synthesis,characterization,and mechanical properties evaluation", *POLYMERS FOR ADVANCED TECHNOLOGIES*, Vol. 2020, Num. 1, Page 1-10, February 2020,
- 14 Parisa Rahnamay Moshtagh, Rana Imani, Shahriar Hojati Emami, Ali Mohammad Sharifi, "An Optimized Calcium Alginate Microcapsule for Mesenchymal Stem Cells Encapsulation", *Journal of Applied Tissue Engineering*, Vol. 5, Num. 1, Page 27-36, December 2019,
- 15 Behzad Bolandi, Rana Imani, "A sustained release gene delivery system based on polymerosome-entrapped injectable hydrogel for articular cartilage tissue engineering: a hypothetical approach", *Journal of Applied Tissue Engineering*, Vol. 5, Num. 2, Page 1-6, December 2019,
- 16 Shirin Nour, Nafiseh Baheiraei, Rana Imani, Mohammad Khodaei, Akram Alizadeh, Navid Rabiee, Seyed Mohammad Moazzeni, "A review of accelerated wound healing approaches: biomaterial-assisted tissue remodeling", *JOURNAL OF MATERIALS SCIENCE-MATERIALS IN MEDICINE*, Vol. 30, Num. 120, Page 1-15, October 2019,
- 17 Farhad Faghihi, Farbod Khoraminia, Rana Imani, "Immune-Mediated Tissue Regeneration Driven by a Biomaterial Scaffold: An Innovative Regenerative Medicine Strategy", , Vol. 22, Num. 3, Page 1-14, August 2019,
- 18 Sara Nejati, Rana Imani, Ali Mohammad Sharifi, "Synthesis and Characterization of Two Sustained Release Systems of Micro- and Nano-sized Particles for Controlled Release of Atorvastatin for Bone Tissue Engineering Applications", , Vol. 22, Num. 3, Page 1-8, August 2019,
- 19 Azin Sadat Ghasemi, Rana Imani, Maryam Yousefzadeh, Shahin Bonakdar, Atefeh Solouk Mofrad, Hossein Fakhrazadeh, "Studying the Potential Application of Electrospun Polyethylene Terephthalate/Graphene Oxide Nanofibers as Electroconductive Cardiac Patch", *MACROMOLECULAR MATERIALS AND ENGINEERING*, Vol. 304, Num. 8, Page 1-13, July 2019,

- 20 Shirin Nour, Nafiseh Baheiraei, Rana Imani, Navid Rabiee, Mohammad Khodaei, Akram Alizadeh, Seyed Mohammad Moazzeni, "Bioactive Materials: A Comprehensive Review on Interactions with Biological Microenvironment Based on the Immune Response", *JOURNAL OF BIONIC ENGINEERING*, Vol. 16, Num. 4, Page 563-581, July 2019,
- 21 Arezoo Dadashzadeh, Rana Imani, Saeid Moghasssemi, Kobra Omidfar, Nabiolah Abolfathi, "Study of hybrid alginate/gelatin hydrogel-incorporated niosomal Aloe vera capable of sustained release of Aloe vera as potential skin wound dressing", *POLYMER BULLETIN*, Vol. 0, Num. 0, Page 1-17, March 2019,
- 22 Zahra Baghban Taraghdari, Rana Imani, Fatemeh Mohabatpour, "A Review on Bioengineering Approaches to Insulin Delivery: A Pharmaceutical and Engineering Perspective", *MACROMOLECULAR BIOSCIENCE*, Vol. 19, Num. 4, Page 1-21, January 2019,
- 23 Rana Imani, Fatemeh Mohabatpour, Fatemeh Sadat Mostafavi, "Graphene-based Nano-Carrier modifications for gene delivery applications", *CARBON*, Vol. 140, Num. 1, Page 569-591, September 2018,
- 24 Rana Imani, Satya Prakash, Hojatollah Vali, Shahab Faghihi, "Polyethylene glycol and octa-arginine dual-functionalized nanographene oxide: an optimization for efficient nucleic acid delivery", *Biomaterials Science*, Vol. 6, Num. 6, Page 1636-1650, May 2018,
- 25 Masoumeh.Meskinfam, Serena Bertoldi, Nicolo Albanese, Alessandro Cerri, Maria Christina Tanzi, Rana Imani, Nafiseh Baheiraei, Mahdi Farokhi, Silvia Fare, "Polyurethane foam/nano hydroxyapatite composite as a suitable scaffold for bone tissue regeneration", *MATERIALS SCIENCE & ENGINEERING C-MATERIALS FOR BIOLOGICAL APPLICATIONS*, Vol. 82, Num. 0, Page 130-140, August 2017,
- 26 Mohammad Mahdi Esmaeili, Mahboobeh Mahmoodi, Rana Imani, "Tantalum carbide coating on Ti-6Al-4V by electron beam physical vapor deposition method: Study of corrosion and biocompatibility behavior", *INTERNATIONAL JOURNAL OF APPLIED CERAMIC TECHNOLOGY*, Vol. 14, Num. 3, Page 374-382, May 2017,
- 27 Mona Hajian, Mahboobeh Mahmoodi, Rana Imani, "In Vitro Assessment of Poly (Vinyl Alcohol) Film Incorporating Aloe Vera for Potential Application as a Wound Dressing", *JOURNAL OF MACROMOLECULAR SCIENCE PART B-PHYSICS*, Vol. 56, Num. 7, Page 435-450, May 2017,
- 28 Mohammad Sadjad Hakam, Rana Imani, Nabiolah Abolfathi, Hossein Fakhrazadeh, Alimohammad Sharifi, "Evaluation of fibrin-gelatin hydrogel as biopaper for application in skin bioprinting: An in-vitro study", *BIO-MEDICAL MATERIALS AND ENGINEERING*, Vol. 27, Num. 6, Page 669-682, February 2017,
- 29 Rana Imani, Wei Shao, Shahriar Hojati Emami, Shahab Faghihi, Satya Prakash, "Improved dispersibility of nano-graphene oxide by amphiphilic polymer coatings for biomedical applications", *RSC Advances*, Vol. 81, Num. 6, Page 77818-77829, August 2016,
- 30 Rana Imani, Wei Shao, Samira Taherkhani, Shahriar Hojati Emami, Satya Prakash, Shahab Faghihi, "Dual-functionalized graphene oxide for enhanced siRNA delivery to breast cancer cells", *COLLOIDS AND SURFACES B-BIOINTERFACES*, Vol. 147, Num. 0, Page 315-325, August 2016,

مقالات کنفرانس

داده های ثبت شده در پورتال

- 1 Alireza Nemati, Rana Imani, Seyyed Mohammad Hosein Siadati, "Investigation of the addition of graphene oxide and reduced graphene oxide nanoparticles on the microstructure of temperature-sensitive composite hydrogel based on PNIPAAm", International conference on nanotechnology and nanoscience, December 2020
- 2 Fateme Nowruzi, Rana Imani, Shahab Faghihi, "Study of Titanium Oxide Nanotube Array Systems as Thymol Nanoreservoirs for Antibacterial Applications", 8th INTERNATIONAL CONFERENCE ON NANOSTRUCTURES (ICNS8), November 2020
- 3 Elham Akbari, Rana Imani, Parvin Shokrollahi, Saeid Heidari Keshel, "pH Dependent Preparation of Hyaluronic Acid Decorated Chitosan Nanoparticles for Drug Delivery Applications", 8th INTERNATIONAL CONFERENCE ON NANOSTRUCTURES (ICNS8), November 2020
- 4 Elham Akbari, Rana Imani, Parvin Shokrollahi, Saeid Heidari Keshel, "Study of A Novel Nanofiber-Containing Ring-Implanted Contact Lens for Corneal Sustained Delivery of Hyaluronic Acid", 16th Royan International Virtual Congress on Stem Cell Biology and Technology, September 2020

- 5 Raziieh Najafloo, Nafiseh Baheiraei, Rana Imani, "A Niosomal Thymol Loaded Collagen/?-TCP Scaf-fold for Addressing Bone Infection Control ", 16th Royan International Virtual Congress on Stem Cell Biology and Technology, September 2020
- 6 Mahla Behyari, Rana Imani, Hamid Keshvari, "Evaluation of Silk Fibroin Nanofibrous Dressing Incorporating Niosomal Rosemary, for Potential Use in Wound Healing ", 16th Royan International Virtual Congress on Stem Cell Biology and Technology, September 2020
- 7 Fereshteh Oustadi, Rana Imani, Masoumeh Haghbin Nazarpak, Ali Mohammad Sharifi, "Enhancement Mechanical Properties of Gelatin hydrogel by PLA Nanofibers and Genipin cross-linking for Bone Tissue Engineering ", 4th Iranian Congress on Progress in Tissue Engineering and Regenerative Medicine, November 2018
- 8 Azin Sadat Ghasemi, Rana Imani, Maryam Yousefzadeh, Atefeh Solouk Mofrad, "Synthesis of Graphene-based Conductive Composites as a nanostructured Cardiac Patch for Potential Application in Heart Regeneration ", the first international Iranian tissue engineering and regenerative medicine congress (ITERM2018), July 2018
- 9 Seyyed Morteza Attari, Rana Imani, Sara Nejati, Alimohammad Sharifi, "Evaluation of particle- based small molecule delivery systems intended for incorporation into bone scaffolds to accelerate bone regeneration ", the first international Iranian tissue engineering and regenerative medicine congress (ITERM2018), July 2018
- 10 Shirin Nour, Rana Imani, Alimohammad Sharifi, Atefeh Solouk Mofrad, "Controlled Release of Deferoxamine from Niosomal Nano-carrier for Potential Skin Wound Healing Applications ", the first international Iranian tissue engineering and regenerative medicine congress (ITERM2018), July 2018
- 11 Mahboobeh Mohebbali, Rana Imani, Mahboobeh Mahmoodi, Behzad Bolandi, Atefeh Solouk Mofrad, "Study of wound dressing based on graphene oxide with antibacterial potential suitable for wound healing application: optimization of structure and properties ", first national nanobiotechnology conference, May 2018
- 12 Mahla Behyari, Rana Imani, Raziye Najafloo, "synthesis and characterization of nanofiber embedding a nanosystem releasing an effective agent in wound healing for application in wound dressings ", first national nanobiotechnology conference, May 2018
- 13 Sara Nejati, Rana Imani, Ali Mohammad Sharifi, "synthesis and characterization of two nano and microparticles-based sustained release systems in order to controlled release of Atorvastatin for bone tissue engineering applications ", first national nanobiotechnology conference, May 2018
- 14 Mahsa Khalili, Hamid Keshvari, Alireza Naderi Sohi, Rana Imani, Maryam Tajabadi, "Dendrimer-modified SPIONs for plasmid DNA condensation ", (7th International Conference on Nanostructures (ICNS7, February 2018
- 15 Raziye Najafloo, Rana Imani, Mahla Behyari, "Synthesis and Characterization of a Niosomal nanocarriers Embedded Electrospun Nano-fiber for Local Delivery of Thymol as a Natural Anti-bacterial Reagent ", international conference on nanofibers, October 2017
- 16 Mahla Behyari, Rana Imani, Raziye Najafloo, "Synthesis and Characterization of Niosomes-loaded silk electrospun nanofibers as a potential diabetic wound dressing ", international conference on nanofibers, October 2017
- 17 Mahboobeh Mohebbali, Rana Imani, Mahboobeh Mahmoodi, Behzad Bolandi, Atefeh Solouk Mofrad, "Fabrication, Evaluation and Optimization of Fibroin/Graphene Oxide Nano-fibrous Composite for potential application as anti-bacterial wound dressing ", international conference on nanofibers, October 2017
- 18 Azin Sadat Ghasemi, Rana Imani, Maryam Yousefzadeh, Nafiseh Baheiraei, Atefeh Solouk Mofrad, "Evaluation of Electrospun polyethylene terephthalate / graphene oxide Composite Nano-fibrous Mat as a Conductive patch for cardiac regeneration ", international conference on nanofibers, October 2017
- 19 Behzad Bolandi, Rana Imani, Shahin Bonakdar, Hossein Fakhrzadeh, "Evaluation of Alginate-Based Hydrogel Incorporating Sustained-Release Platelet- Rich Plasma Cartilage Tissue Engineering Applications ", The Second National Festival and International Congress on Stem Cell and Regenerative Medicine, July 2017
- 20 Davood Kharaghani, Masoumeh Meskinfam, Serena Bertoldi, Rana Imani, Sahar Balaghali, Mozghan Rezaeikanavi, "Biomimetic Hybrid Scaffolds for eye orbital bone tissue engineering ", 2016 ARVO Annual Meeting, Research: A Vision of Hope, May 2016
- 21 Rana Imani, Wei Shao, Shahb Faghihi, Satya Prakash, "Multi-functionalized Graphene Nano-carrier for Efficient Intracellular Delivery of siRNA and Potent Gene Therapy ", The First National Festival & International Congress on STEM CELL and REGENERATIVE MEDICINE, May 2016

- 22 Sharifi Ali Mohammad, Rana Imani, Mohabatpour Fatemeh, "Investigation of the Antioxidant Effect of Deferoxamine Conjugated Nanoceria on Viability of PC12-Cells Exposed to Oxidative Stress Induced by High Glucose ", The First National Festival & International Congress on STEM CELL and REGENERATIVE MEDICINE, May 2016
- 23 Rana Imani, "cell, gene and drug delivery systems ", the first symposium on regenerative nanotechnology, December 2015

دروس ارائه شده

#	عنوان درس	توصیف درس	دوره سرفصل ها درسی
1	Scaffolds in Tissue Engineering	Introduction to basics of scaffolds, characteristics and design criteria	Spring 2022
2	Drug Delivery Systems	Introduction to pharmacology and drug concepts, introduction to drug delivery mechanism and controlling delivery rate, introduction to advanced drug delivery systems	Spring 2022
3	Cellular & Molecular Biology	Student could be familiar with cell structure, cell function, cell compartments and their interactions, the application of cell biology in tissue engineering with giving some real applied examples	Spring 2022
4	Introduction to Biomedical Engineering	Introduction to biomaterials in biomedical engineering	Fall 2021
5	Gene Therapy	an introduction to gene therapy application in tissue engineering	Fall 2021
6	Drug Delivery Systems	Introduction to pharmacology and drug concepts, introduction to drug delivery mechanism and controlling delivery rate, introduction to advanced drug delivery systems	Spring 2021
7	Scaffolds in Tissue Engineering	Introduction to basics of scaffolds, characteristics and design criteria	Spring 2021
8	Cellular & Molecular Biology	Student could be familiar with cell structure, cell function, cell compartments and their interactions, the application of cell biology in tissue engineering with giving some real applied examples	Spring 2021
9	Gene Therapy	an introduction to gene therapy application in tissue engineering	Fall 2020

اختراعات/ ثبت پتنت

#	عنوان اختراع	شماره ثبت	کشور ثبت کننده	همکاران	تاریخ ثبت	تاریخ انقضا
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داده های ثبت شده در پورتال

- 1416/10/30 1399/4/11 علی مختارزاده بنه خلخال، رعنا ایمانی، پروین شکراللهی - 101570 1 داربست هیبریدی با ساختار گرادسانی با قابلیت چاپ توسط چاپگر زیستی جهت کاربرد در چاپ زیستی غضروف استئوکندرال
- 1416/10/30 1399/1/13 رعنا ایمانی، فرشته اوستادی، علی محمد شریفی، معصومه حق بین نظریاک - 100963 2 داربست استخوانی ژلاتین/نانوالیاف پلی لاکتیک اسید حاوی نانوذرات سیلیکون با قابلیت رهایش رزواستاتین کلسیم