

Curriculum Vitae

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Dr. Hassan Niknejad, PharmD, PhD

Department of Pharmacology and Nanomedicine and Tissue Engineering Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Academic Position:

Associate Professor 2016-current

Department of Pharmacology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Assistant Professor 2009-2016

Nanomedicine and Tissue Engineering Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Other Personal Information:

Date of Birth: 21 Sep 1975

Gender & Marital: Male, Married

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Education:

1995-2002

Tehran University of Medical Sciences, Doctor of Pharmacy (Pharm.D.)

Thesis: Investigation of interaction between nitric oxide and ATP-dependent potassium channel in isolated rat atria

2002-2008

Shahid Beheshti University of Medical Sciences, PhD

Thesis: The effects of designed Nano-matrix on dopaminergic differentiation of amniotic epithelial stem cells.

Awards:

First Rank of Technology Achievements in Research Festival of Shahid Beheshti University of Medical Sciences (Year of award: 2022)

The World's Top 2% Scientist Based on the Ranking of Stanford University (Year of award: 2021)

First Rank of Research Festival in Shahid Beheshti University of Medical Sciences (Year of award: 2014)

Research interest:

Regenerative Medicine

Stem cells

Tissue Engineering

Medical Nanotechnology

Drug Delivery

Angiogenesis

Cancer

Grants:

- 1) International network for translating research on perinatal derivatives into therapeutic approaches

Funding organization: European Cooperation in Science & Technology (Ecost) (COST Action CA17116)

- 2) Design and construction of a bioreactor for liver decellularization and recellularization equipped with cell encapsulation microfluidic system for liver tissue engineering

- Funding organization:** National Institutes for Medical Research Development (NIMAD) (Award number: 963951)
- 3) In vitro effects of 2D and 3D chitosan-gelatin scaffolds on angiogenesis and immunological state of amniotic epithelial cells
Funding organization: National Institutes for Medical Research Development (NIMAD) (Award number: Elite Researcher Grant Proposal no. 963248)
- 4) Full- thickness wound healing in an animal model using freeze dried amniotic membrane and Lacto-N-Neotetraose oligosaccharide
Funding organization: National Institutes for Medical Research Development (NIMAD) (Award number: Elite Researcher Grant Proposal no. 958796)
- 5) Differentiation of amniotic epithelial stem cells into dopaminergic neurons via controlled delivery of CdSe quantum dots conjugated retinoic acid
Funding organization: Iran National Science Foundation (INSF) (Award number: 89002428)
- 6) Evaluating the effects of cold plasma atmospheric and its activated media on the viability and apoptosis of cancer cells
Funding organization: National Institutes for Medical Research Development (NIMAD) (Award number: Elite Researcher Grant Proposal no. 971253)
- 7) Design and Fabrication of Biocompatible Conducting Nanochitosan/Polypyrrole-Alginate Scaffold for Nerve Tissue Engineering
Funding organization: National Institutes for Medical Research Development (NIMAD) (Award number: Elite Researcher Grant Proposal no. 987688)
- 8) Comparison of the human amniotic epithelial stem cells resistance against the cytotoxic effect of Abraxane and Paclitaxel and evaluating the uptake/release ability of these cells
Funding organization: National Institutes for Medical Research Development (NIMAD) (Award number: Elite Researcher Grant Proposal no. 4000341)
- 9) Investigation of Inhibition of Scar Formation in an Animal Model through Cell Therapy with Amniotic Membrane-Derived Stem Cells Using a Cell Spraying System
Funding organization: Vice-Chancellor of Research Affairs, Shahid Beheshti University of Medical Sciences (Award number: 30744)

Publications:

Book

- 1) Hassan Niknejad (2012). Application of Embryonic Stem Cells in Parkinson's Disease, Mechanisms in Parkinson's Disease -Models and Treatments, Dr. Juliana Dushanova (Ed.), ISBN: 978-953-307-876-2, InTech, DOI: 10.5772/24400.
- 2) Payam Sadeghi and Mohammad Amiri (2018). Guideline for Scientific Olympiad of Medical Students. Publisher: SBMU. Under supervision of Hassan Niknejad.

Patents

- 1) Production of albumin nanoparticles without toxicity of glutaraldehyde.
- 2) Artificial skin through in situ differentiation of amniotic cells
- 3) Extraction of anti-cancer ingredients from human placenta
- 4) High-Yield production of collagen type I and IV from human placenta
- 5) Biocompatible paclitaxel-conjugated albumin nanoparticles

Published Articles:

- 1) Farhadhosseinabadi, B, Mohammadian M, Jafari A, Abdollahpour-Alitappeh M, Gholipourmalekabadi M, Sineh Sepehr K, Samadikuchaksaraei A, Niknejad H. Type 2 Immune Response and Skin Tissue Engineering. **Tissue Engineering: Part A**, 2022, 28, Suppl 1.
- 2) Biniazan, F., Rajaei, F., Darabi, S, Babajani, A, Mashayekhi, M, Vousooghi, N, Abdollahifar, M, Salimi, M, Niknejad, H. Effects of Placenta-Derived Human Amniotic Epithelial Cells on the Wound Healing Process and TGF- β Induced Scar Formation in Murine Ischemic-Reperfusion Injury Model. **Stem Cell Rev and Rep**, 2022, <https://doi.org/10.1007/s12015-022-10355-7>.
- 3) Sadeghmousavi, S., Soltani Khaboushan, A., Jafarnezhad-Ansariha, F., Niknejad, H., Kajbafzadeh, AM. The role of spinal cord tractography in detecting lesions following selective bladder afferent and efferent fibers: A novel method for induction of neurogenic lower urinary tract

- dysfunction in rabbit, **Neurourology and Urodynamics**, 2022, doi: 10.1002/nau.25009. Online ahead of print. doi: 10.1002/nau.25009.
- 4) Ghasemzaie, N, Hadjizadeh, A, Niknejad, H. Chitosan nanoparticles encapsulated into PLA/gelatin fibers for bFGF delivery. **Journal of Polymer Engineering**, 2022, 0248.
 - 5) Babajani, A, Moeinabadi-Bidgoli, K, Niknejad, N, Rismanchi, H, Shafiee, S, Shariatzadeh, S, Jamshidi, E, Farjoo, MH, Niknejad, H. Human placenta-derived amniotic epithelial cells as a new therapeutic hope for COVID-19-associated acute respiratory distress syndrome (ARDS) and systemic inflammation. **Stem Cell Research & Therapy**, 2022, 13 (1), 1-22.
 - 6) Manzari-Tavakoli, A, Babajani, A, Farjoo, MH, Hajinasrollah, M, Bahrami, S, Niknejad, H. The Cross-Talks Among Bone Morphogenetic Protein (BMP) Signaling and Other Prominent Pathways Involved in Neural Differentiation. **Frontiers in Molecular Neuroscience**, 2022, 15.
 - 7) Jafari, A, Rezaei-Tavirani, M, Farhadhosseinabadi, B, Zali, H, Niknejad, H. Human amniotic mesenchymal stem cells to promote/suppress cancer: two sides of the same coin. **Stem Cell Research & Therapy**, 2021, 12 (1), 1-11
 - 8) Motamedi, S, Esfandpour, A, Babajani, A, Jamshidi, E, Bahrami, S, Niknejad, H. The current challenges on spray-based cell delivery to the skin wounds. **Tissue Engineering Part C: Methods**, 2021, 27 (10), 543-558.
 - 9) Jafari, A, Rezaei-Tavirani, M, Niknejad, H, Zali, H. Tumor Targeting by Conditioned Medium Derived from Human Amniotic Membrane: New Insight in Breast Cancer Therapy. **Technology in Cancer Research & Treatment**, 2021, 20, 15330338211036318.
 - 10) Moeinabadi-Bidgoli, K, Babajani, A, Yazdanpanah, G, Farhadhosseinabadi, B, Jamshidi, E, Bahrami, S, Niknejad, H. Translational insights into stem cell preconditioning: from molecular mechanisms to preclinical applications. **Biomedicine & Pharmacotherapy**, 2021, 142, 112026.
 - 11) Safaeinejad, F, Asadi, S, Ghafghazi, S, Niknejad, H. The synergistic anti-apoptosis effects of amniotic epithelial stem cell conditioned medium and ponesimod on the oligodendrocyte cells. **Frontiers in Pharmacology**, 2021, 12, 691099.

- 12) Babajani, A, Hosseini-Monfared, P, Abbaspour, S, Jamshidi, E, Niknejad, H. Targeted mitochondrial therapy with over-expressed MAVS protein from mesenchymal stem cells: a new therapeutic approach for COVID-19. **Frontiers in Cell and Developmental Biology**, 2021, 9, 695362.
- 13) Shariatzadeh, S, Shafiee, S, Tayebi, T, Yazdanpanah, G, Majd, A, Bahrami, S, Zafari, A, Niknejad, H. Developing a pro-angiogenic placenta derived amniochorionic scaffold with two exposed basement membranes as substrates for cultivating endothelial cells. **Scientific Reports**, 2021, 11 (1), 1-14
- 14) Tayebi, T, Baradaran-Rafii, A, Hajifathali, A, Rahimpour, A, Zali, H, Shaabani, A, Niknejad, H. Biofabrication of chitosan/chitosan nanoparticles/polycaprolactone transparent membrane for corneal endothelial tissue engineering. **Scientific Reports**, 2021, 11 (1), 1-12.
- 15) Jamshidi, E, Babajani, A, Soltani, P, Niknejad, H. Proposed mechanisms of targeting COVID-19 by delivering mesenchymal stem cells and their exosomes to damaged organs. **Stem cell reviews and reports**, 2021, 17 (1), 176-192.
- 16) Shafiee, S, Shariatzadeh, S, Zafari, A, Majd, A, Niknejad, H. Recent Advances on Cell-Based Co-Culture Strategies for Prevascularization in Tissue Engineering. **Frontiers in Bioengineering and Biotechnology**, 2021, 9.
- 17) Biniazan, F, Manzari-Tavakoli, A, Safaeinejad, F, Moghimi, A, Rajaei, F, Niknejad H. The differentiation effect of bone morphogenetic protein (BMP) on human amniotic epithelial stem cells to express ectodermal lineage markers. **Cell and Tissue Research**, 2021, 383 (2), 751-763.
- 18) Nazerian, Y, Vakili, K, Ebrahimi, A, Niknejad, H. Developing Cytokine Storm-Sensitive Therapeutic Strategy in COVID-19 Using 8P9R Chimeric Peptide and Soluble ACE2. **Frontiers in Cell and Developmental Biology**, 2021, 9.
- 19) Khanali, J, Azangou-Khyavy, M, Boroomand-Saboor, M, Ghasemi, M, Niknejad, H. JAK/STAT-Dependent Chimeric Antigen Receptor (CAR) Expression: A Design Benefiting from a Dual AND/OR Gate Aiming to Increase Specificity, Reduce Tumor Escape and Affect Tumor Microenvironment. **Frontiers in Immunology**, 2021, 2181.
- 20) Manzari-Tavakoli, A., Tarasi, R., Sedghi, R, Moghimi, A., Niknejad, H. Fabrication of nanochitosan incorporated polypyrrole/alginate

- conducting scaffold for neural tissue engineering. **Scientific reports**, 2020, 10 (1), 1-10.
- 21) Sedghi, R, Gholami, M, Shaabani A, Saber M, Niknejad H. Preparation of novel chitosan derivative nanofibers for prevention of breast cancer recurrence. **European Polymer Journal**, 2020, 123, 109421.
 - 22) Farhadhosseinabadi, B., Gholipourmalekabadi, M., Salimi, M., Kazemi, B., Niknejad, H. The in vivo effect of Lacto-N-neotetraose (LNnT) on the expression of type 2 immune response involved genes in the wound healing process. **Scientific Reports**, 2020, 10(1), 997.
 - 23) Babajani, A., Soltani, P., Jamshidi, E., Farjoo, M.H., Niknejad, H. Recent Advances on Drug-Loaded Mesenchymal Stem Cells with Anti-neoplastic Agents for Targeted Treatment of Cancer. **Frontiers in Bioengineering and Biotechnology**, 2020, 8, 748.
 - 24) Sharifi, S., Mostafavi, P.G., Tarasi, R., Hamburger, M., Niknejad, H. Purified compounds from marine organism sea pen induce apoptosis in human breast cancer cell MDA-MB-231 and cervical cancer cell Hela. **European Journal of Pharmacology**, 2020, 877, 173075.
 - 25) Ghamari, S.-H., Abbasi-Kangevari, M., Tayebi, T., Bahrami, S., Niknejad, H. The Bottlenecks in Translating Placenta-Derived Amniotic Epithelial and Mesenchymal Stromal Cells Into the Clinic: Current Discrepancies in Marker Reports. **Frontiers in Bioengineering and Biotechnology**, 2020, 8, 180.
 - 26) Pandamooz, S., Jafari, A., Salehi, M.S., Niknejad, H., Azarpira, N., Dargahi, L. Substrate stiffness affects the morphology and gene expression of epidermal neural crest stem cells in a short term culture. **Biotechnology and Bioengineering**, 2020, 117(2), pp.305-317.
 - 27) Jezeh, M.A., Tayebi, T., Khani, M.R., Niknejad, H., Shokri, B. Direct cold atmospheric plasma and plasma-activated medium effects on breast and cervix cancer cells. **Plasma Processes and Polymers**, 2020, 1-11.
 - 28) A Jafari, H Niknejad, M Rezaei-Tavirani, C D'Amico, H Zali. The biological mechanism involved in anticancer properties of amniotic membrane. **Oncology reviews**, 2020, 14 (1).
 - 29) SJ Tabatabaei Rezaei, A Mashhadi Malekzadeh, L Sarbaz, H Niknejad. Hyperbranched polymers functionalized magnetic nanoparticles for

- targeted delivery and intracellular release of cisplatin. **Journal of Applied Chemistry**, 2020 15 (54), 55-70.
- 30) Tayebi, T., Aminrayajezeh, M., Khani, M.R., Shokri, B., Niknejad, H. Evaluation of inducing apoptosis as cell death mechanism by cold atmospheric plasma in cervix cancer cell line (Hela). **Journal of Isfahan Medical School**, 2020, 37(556), pp.1354-1360
 - 31) Jamadi, Z., Parhizgar, P., Yazdanpanah, G., Tarasi, R., Niknejad, H. Recent advances in organ preservation solutions and methods for using in liver and kidney transplantation. **JIMS**, 2020, 37(557), pp.1388-1400
 - 32) Farhdihosseiniabadi, B., Salimi, M., Kazemi, B., Mozafari, M., Niknejad, H. Inducing type 2 immune response, induction of angiogenesis, and anti-bacterial and anti-inflammatory properties make Lacto-n-Neotetraose (LNnT) a therapeutic choice to accelerate the wound healing process. **Medical Hypotheses**, 2020, 134, 109389
 - 33) Jezeh, M.A., Khani, M.R., Niknejad, H., Shokri, B. Effects of cold atmospheric plasma on viability of breast (MDA-MB-231) and cervical (Hela) cancer cells. **Koomesh**, 2019, 21(4), pp.694-701
 - 34) Rezaei, S.J.T., Malekzadeh, A.M., Ramazani, A., Niknejad, H. Ph-sensitive magnetite nanoparticles modified with hyperbranched polymers and folic acid for targeted imaging and therapy. **Current Drug Delivery**, 2019, 16(9), pp.839-848
 - 35) Aminraya-Jezeh, M., Khani, M.R., Shokri, B., Niknejad, H. The effects of plasma-activated medium on the viability of breast (MDA-MB-231) and cervical (HeLa) cancer cell lines. **Journal of Isfahan Medical School**, 2019, 37(526), pp.493-499
 - 36) Khalesi, N., Bandehpour, M., Bigdeli, M.R., Niknejad, H., Dabbagh, A., Kazemi, B. 14-3-3 ζ protein protects against brain ischemia/reperfusion injury and induces BDNF transcription after MCAO in rat. **Journal of Applied Biomedicine**, 2019, 17(2), pp.99-106
 - 37) M Abbasi-Kangevari, SH Ghamari, F Safaeinejad, S Bahrami, H Niknejad. Potential Therapeutic Features of Human Amniotic Mesenchymal Stem Cells in Multiple Sclerosis: Immunomodulation, Inflammation Suppression, Angiogenesis Promotion, Oxidative Stress

- Inhibition, Neurogenesis Induction, MMPs Regulation, and Remyelination Stimulation. **Frontiers in Immunology** (2019) 10, 238
- 38) S Azizian, A Hadjizadeh, H Niknejad Chitosan-gelatin porous scaffold incorporated with Chitosan nanoparticles for growth factor delivery in tissue engineering. **Carbohydrate polymers** (2018) 202, 315-322
- 39) K Modaresifar, A Hadjizadeh, H Niknejad Design and fabrication of GelMA/chitosan nanoparticles composite hydrogel for angiogenic growth factor delivery. **Artificial cells, nanomedicine, and biotechnology** (2018) 46 (8), 1799-1808.
- 40) H Moravvej, F Abdollahimajd, MH Naseh, Z Piravar, E Abolhasani, Fibroblast injection vs. fibroblasts on amniotic membrane in RDEB. **British Journal of Dermatology** (2018) 179 (1), e60-e60.
- 41) SJ Tabatabaei Rezaei, A Hesami, H Khorramabadi, V Amani, H Niknejad. Pt (II) complexes immobilized on polymer-modified magnetic carbon nanotubes as a new platinum drug delivery system. **Applied Organometallic Chemistry** (2018) 32 (7), e4401
- 42) H Moravvej, F Abdollahimajd, MH Naseh, Z Piravar, E Abolhasani, H Niknejad. Cultured allogeneic fibroblast injection vs. fibroblasts cultured on amniotic membrane scaffold for dystrophic epidermolysis bullosa treatment. **British Journal of Dermatology** (2018) 179 (1), 72-79
- 43) R Sedghi, N Sayyari, A Shaabani, H Niknejad, T Tayebi. Novel biocompatible zinc-curcumin loaded coaxial nanofibers for bone tissue engineering application. **Polymer** (2018) 142, 244-255
- 44) B Farhadhosseinabadi, M Farahani, T Tayebi, A Jafari, F Biniazan, H. Niknejad. Amniotic membrane and its epithelial and mesenchymal stem cells as an appropriate source for skin tissue engineering and regenerative medicine. **Artificial cells, nanomedicine, and biotechnology** (2018), 1-10.
- 45) S Naghizadeh, N Hassanzadeh Nemati, A Hassani Najafabadi, H Niknejad. Controlled release of fluorouracil (5-FU) from chitosan-co-poly(ethylene glycol)/ poly(glycerol sebacate)-co-poly(ethylene

- glycol)-coated iron oxide. **International Journal of Polymeric Materials and Polymeric Biomaterials** (2018) 67 (4) 212-220.
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- 47) F A Tehrani, S Azizian, K Modaresifar, H Peirovi, H Niknejad. The antibacterial effect of low temperature stored amnion on growth of escherichia coli, staphylococcus aureus and pseudomonas aeruginosa. **JBUM** (2018) 20 (1), 19-13.
- 48) F Safaeinejad, S Bahrami, H Redl, H Niknejad. Inhibition of inflammation, suppression of matrix metalloproteinases, induction of neurogenesis, and antioxidant property make bryostatin-1 a therapeutic choice for multiple Sclerosis. **Frontiers in pharmacology** (2018) 9, 625.
- 49) S Sharifi, PG Mostafavi, AM Moradi, MH Givianrad, H Niknejad. Inducing Apoptosis of Cancer Cells Using Sea Pen *Virgularia gustaviana* Extract Which is Comparable to Cembrane Diterpene Sarcophine. Iranian journal of pharmaceutical research: **IJPR** (2018) 17 (2), 640-652.
- 50) FA Tehrani, K Modaresifar, S Azizian, H Niknejad. Induction of antimicrobial peptides secretion by IL-1 β enhances human amniotic membrane for regenerative medicine. **Scientific reports** (2017) 7 (1), 17022.
- 51) M Kakavand, G Yazdanpanah, A Ahmadiani, H Niknejad. Blood compatibility of human amniotic membrane compared with heparin-coated ePTFE for vascular tissue engineering. **Journal of tissue engineering and regenerative medicine** (2017) 11 (6), 1701-1709.
- 52) A Golchin, H Niknejad. Cell therapy using embryonic stem cell source in clinical trial studies: advantages and limitations. **JMUMS** (2017) 27 (148), 161-175.

- 53) HS Abandansari, M Abuali, MR Nabid, H Niknejad. Enhance chemotherapy efficacy and minimize anticancer drug side effects by using reversibly pH-and redox-responsive cross-linked unimolecular micelles. **Polymer** (2017) 116, 16-26.
- 54) AM Malekzadeh, A Ramazani, SJT Rezaei, H Niknejad. Design and construction of multifunctional hyperbranched polymers coated magnetite nanoparticles for both targeting magnetic resonance imaging and cancer therapy. **Journal of colloid and interface science** (2017) 490, 64-73.
- 55) K Modaresifar, S Azizian, M Zolghadr, H Moravvej, A Ahmadiani, The effect of cryopreservation on anti-cancer activity of human amniotic membrane. **Cryobiology** (2017) 74, 61-67.
- 56) M Zolghadr, K Modaresifar, S Azizian, H Niknejad. Evaluating the effects of fresh and cryopreserved amniotic membrane on viability of HeLa and MDA-MB-231 cancer cells and angiogenesis of rat aorta ring. **Journal of Isfahan Medical School (IUMS)** (2017) 35 (424), 340-344.
- 57) S Sharifi, P Ghavam Mostafavi, A Mashinchian, MH GivianRad, Cytotoxic Effect of Crude Extract of Sea Pen *Virgularia gustavina* on HeLa and MDA-MB-231 Cancer Cell Line. **International Journal of Pharmacological and Pharmaceutical Sciences** (2017) 4 (6) 1-8.
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- 59) G Yazdanpanah, T Deihim, H Peirovi, H Niknejad. The effects of epithelial and spongy layers on transparency of amniotic membrane as a substitute for corneal tissue engineering. **Scientific Journal of Kurdistan University of Medical Sciences** (2016) 21 (2), 11-21.
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- 65) SJT Rezaei, L Sarbaz, H Niknejad. Folate-decorated redox/pH dual-responsive degradable prodrug micelles for tumor triggered targeted drug delivery. **RSC Advances** (2016) 6 (67), 62630-62639.
- 66) T Deihim, G Yazdanpanah, H Niknejad. The Effect of Lyophilization on Light Transmission of Amniotic Membrane: A Comparison with Rabbit Cornea. **Journal of Kerman University of Medical Sciences** (2016) 23 (3), 308-320.
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- 81) H Niknejad, G Yazdanpanah. Anticancer effects of human amniotic membrane and its epithelial cells. **Medical hypotheses** (2014) 82 (4), 488-489
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