HONG NIU (Sherry)

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Education

- **The Ohio State University (OSU)** — Columbus, OH, USA
  Ph.D. in Materials Science and Engineering — *Aug. 2015 - Dec. 2018*
- **University of Florida (UF)** — Gainesville, FL, USA
  M.S. in Materials Science and Engineering — *Aug. 2013 - May 2015*
- **Beijing University of Chemical Technology (BUCT)** — Beijing, China
  B.E. in Polymer Science and Engineering — *Aug. 2009 - Jun. 2013*

Professional Experience

- **Washington University School of Medicine in St. Louis** — St Louis, MO
  Center of Regenerative Medicine Distinguished Postdoctoral Trainee — *Will start Oct. 2020 - present*
  - To attend Training in Regenerative Medicine (TRM) courses and lectures offered by the Program Director
  - To participate in the CRM symposium, CRM-sponsored WIPS and seminar series
  - To complete NIH-required Responsible Conduct of Research (RCR) Training

- **Washington University in St Louis** — St Louis, MO
  Postdoctoral Research Associate and Lab Manager — *Jan. 2019 - present*
  - Synthesize multi-functional polymeric biomaterials and investigate the mechanism and pathways of various treatments for therapeutic angiogenesis and arteriogenesis
  - Create novel drug delivery systems to attenuate adverse cardiac remodeling by preserving and vascularizing cardiac extracellular matrix and inhibiting cardiac fibrosis.
  - Optimize materials characterization, and develop protocols for protein extraction and purification, isolation and culture of cells
  - Develop and optimize different animal models including diabetic wound healing and critical limb ischemia

- **The Ohio State University** — Columbus, OH
  Graduate Research Associate — *Aug. 2015 - Dec. 2018*
  - Fabricate drug delivery systems for pre-clinical use in wound healing collaborated with Medical School in the Ohio State University
  - Develop bioactive hydrogels and apply to animal models using subcutaneous/intramuscular injection for tissue regeneration and fast angiogenesis
  - Create novel cell delivery systems capable of simultaneously increasing both cell survival and paracrine effects, thus significantly improving therapeutic efficacy for cardiavascular diseases

- **University of Florida** — Gainesville, FL
  Graduate Research Trainee — *Aug. 2014 - May 2015*
  - Synthesize functional magnetic nanoparticles for gene transfection
  - Characterizations using various instruments including XPS, SEM, TEM, western blot and flow cytometry
  - Supervisor: Prof. Jon Dobson

- **SINOPEC Research Institute** — Beijing, China
  Research Intern — *May 2015 - Aug. 2015*
  - Test and verify mechanical properties of samples from different companies
  - Data analysis for tensile tests of polymer scaffolds

- **Abbott Laboratories** — Beijing, China
  Research Intern — *Mar. 2013 - Jul. 2013*
  - Sales assistant representative for pacemakers
  - Customer representative for China Interventional Therapeutics 2013 in Partnership with TCT (CIT China 2013) taken by Chinese Medical Association

Publications

[14] **Niu H**, Guan Y, Liu Z, Dang Y, Shen J, Mohamed Z, Ma L, and Guan J. "Modulation of Diabetic Wound Healing with a TGF1/p38 Blocking Peptide Delivered by an ROS-sensitive Hydrogel", manuscript in preparation.

[13] **Niu H**, Guan Y, Liu Z, Dang Y, Shen J, Mohamed Z, Ma L, and Guan J. "Sustained Oxygenation Accelerates Diabetic Wound Healing by Simultaneously Promoting Epithelialization and Angiogenesis, and Decreasing Tissue Inflammation", submitted *Science Advances*, 2021, under review.

[12] Dang Y, Gao N, **Niu H**, Guan Y, Fan Z, and Guan J. "Targeted Delivery of a Matrix Metalloproteinases-2 Specific Inhibitor Using Multifunctional Nanogels to Attenuate Ischemic Skeletal Muscle Degeneration and Promote Revascularization", in *ACS applied materials and interfaces*, 2021, 13(5): 5907-5918.

[11] Guan Y, Gao N, **Niu H**, Dang Y, and Guan J. "Oxygen-release Microspheres Capable of Releasing Oxygen in Response to Environmental Oxygen Level to Improve Stem Cell Survival and Tissue Regeneration in Ischemic Hindlimbs", in *Journal of Controlled Release*, 2021, 331: 376-389.

[10] Guan Y, **Niu H**, Dang Y, Gao N, and Guan J. "Photoluminescent Oxygen-release Microspheres to Image the Oxygen Release Process In Vivo", in *Acta Biomaterialia*, 2020.

[9] **Niu H**, Li C, Li X, Guan Y, Dang Y, Li X, Fan Z, Shen J, Ma L and Guan J. "High Oxygen Preservation Hydrogels to Augment Cell Survival under Hypoxic Condition", in *Acta Biomaterialia*, 2020, 105: 56-67.

[8] Fan Z, Xu Z, **Niu H**, Sui Y, Li H, Ma J and Guan J. "Spatiotemporal delivery of basic fibroblast growth factor to directly and simultaneously attenuate cardiac fibrosis and promote cardiac tissue vascularization following myocardial infarction", in *Journal of Controlled Release*, 2019, 311: 233-244.

[7] Li C, Huang Z, Gao N, Sui Y, **Niu H** and Guan J. "Injectable Oxygen Sensitive Chitosan Complex with High Oxygen Sensitivity and Stability to Oxidoreductants", in *ACS Biomaterials Science & Engineering*, 2019, 5(5): 2173-2179.

[6] **Niu H**, Li X, Li H, Fan Z, Ma J, and Guan J. "Thermosensitive, Fast Gelling, Photoluminescent, Highly Flexible, and Degradable Hydrogels for Stem Cell Delivery", in *Acta Biomaterial*, 2019, 83: 96-108.

[5] Fan Z, Xu Z, **Niu H**, Gao N, Guan Y, Li C, Dang Y, Cui X, Liu XL, Duan Y, Li H, Zhou X, Lin PH, Ma J, and Guan J. "An Injectable Oxygen Release System to Augment Cell Survival and Promote Cardiac Repair Following Myocardial Infarction", in *Scientific reports*, 2018, 8(1): 1371.

[4] Zhu Q, Li X, Fan Z, Xu Y, **Niu H**, Li C, Dang Y, Huang Z, Wang Y, and Guan J. "Biomimetic polyurethane/TiO2 nanocomposite scaffolds capable of promoting biomineralization and mesenchymal stem cell proliferation", in *Materials Science and Engineering*: C, 2018, 85: 79-87.

[3] Fan Z, Li X, **Niu H**, and Guan J. "Myocardial Regenerative Medicine", in *Advances in polyurethane biomaterials*, Woodhead Publishing, 2016. 353-386.

[2] Li Z, Fan Z, Xu Y, **Niu H**, Xie X, Liu Z, and Guan J. "Thermosensitive and Highly Flexible Hydrogels Capable of Stimulating Cardiac Differentiation of Cardiosphere-Derived Cells under Static and Dynamic Mechanical Training Conditions", in *ACS applied materials & interfaces*, 2016, 8(25): 15948-15957.

[1] Li Z, Fan Z, Xu Y, Lo W, Wang X, **Niu H**, Li X, Xie X, Khan M, and Guan J. "pH-Sensitive and Thermosensitive Hydrogels as Stem-Cell Carriers for Cardiac Therapy", in *ACS applied materials & interfaces*, 2016, 8(17): 10752-10760.

Presentations

- *Therapeutic Arteriogenesis and Vessel Branching of Dll4/VEGF Delivery System*, Society for Biomaterials (SFB), Seattle, WA, Apr. 2019.
- *Accelaration of Blood Perfusion and Tissue Regeneration by Restoring Endothelial Cell Function using a Novel Peptide in Lower Limb Ischemia Model*, top-ranked oral presentation, Musculoskeletal Research Center Annual Symposium, St Louis, MO, Feb. 2019.
- *ROS, pH and Temperature Responsive Hydrogels for Stem Cell Therapy*, SFB, Atlanta, GA, Apr. 2018.
- *Restoration of Endothelial Cell Function in Ischemic Tissue for Accelerated Vascularization*, BMES Annual Meeting, Phoenix, AZ, Oct. 2017.

- *Biodegradable, Imagable, Injectable, and Thermosensitive Hydrogels for Cardiac Cell Therapy*, SFB, Minneapolis, MN, Apr. 2017.
- *Injectable and Thermosensitive Hydrogels with High Oxygen Permeability*, 12th National Graduate Polymer Conference, Akron, OH, Jun. 2016.

Professional Skills

Proficient in:

- Imaging techniques covering light microscopy, electron miscroscopy, microCT and master in image processing and analysis
- Molecular analytical techniques including Western blot, Real-time Reverse transcription polymerase chain reaction (RT-PCR), Immunohistochemistry and Flow Cytometry
- Structure design and various polymerization methods for creating drug/cell delivery carriers
- Data analysis using statistical softwares such as Statistical Package for Social Science (SPSS), Matlab and Gradpad Prism
- Material characterization including NMR, FTIR, UV-Vis, DSC, SEM, TEM, XPS and Mechanical test machine (Instron)

Familiar with:

- Animal surgeries including Wound assay and critical limb ischemia
- Basic mouse handling and restraint, taking tissues for genotyping, assessing a mouse, different injections including subcutaneous injection, intramuscular injection and intravenous injection
- Programming using Matlab, Python and LaTeX

Honors and Awards

- Center of Regenerative Medicine (CRM) Travel Award 2020
- Musculoskeletal Research Center (MRC) Travel Award 2019
- STAR Award in Society of Biomaterials (SFB) 2017
- Achievement Award in College of Engineering (UF) 2013
- First-class National Scholarship (Beijing) 2013
- First-class National Scholarship (Beijing) 2012
- Gold Award of Elastomer Scholarship (BUCT) 2011
- Silver Award of Mathematical Modeling Contest (BUCT) 2011