TAIMOOR HASAN QAZI, Ph.D.

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RESEARCH EXPERIENCE

03.2019-present — Postdoctoral fellow
Department of Bioengineering, University of Pennsylvania, Philadelphia, USA
Project: Engineered granular hydrogels for endogenous tissue repair
Advisor: **Dr. Jason A. Burdick**

01.2017-02.2019 — Postdoctoral researcher
Julius Wolff Institute for Musculoskeletal Biomechanics and Regeneration
Charité Medical University Berlin, Germany
Project: Immunomodulatory therapy for skeletal muscle regeneration
Advisor: **Dr. Georg N. Duda**

EDUCATION

01.2013-12.2016 — Ph.D. – Medical Biotechnology (*Summa Cum Laude*)
Technical University of Berlin, Germany
Thesis: Synthetic biomaterial microenvironments to modulate paracrine effects of mesenchymal stromal cells for skeletal muscle regeneration
Advisors: **Dr. Georg N. Duda (Charité), Dr. David J. Mooney (Harvard)**

09.2010-12.2012 — M.Sc. – Advanced Materials and Processes
University of Erlangen-Nuremberg, Germany
Thesis: Electrically conductive biomaterial patches for cardiac tissue engineering
Advisor: **Dr. Aldo R. Boccaccini**

09.2006-06.2010 — B.S. – Metallurgy and Materials Engineering
Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Pakistan

AWARDS & HONORS

2021 — **Postdoctoral Recognition Award** – Society for Biomaterials (SFB)
2019 — **Research Fellowship** – German Research Foundation (DFG)
2019 — **Outstanding Reviewer Award** – Biomedical Materials (IOP Publishing)
2017 — **Basic Research Prize** – German Society for Orthopedics and Traumatology (DGOU)
2017 — **Doctoral Dissertation Prize** – German Society for Traumatology (DGU)
2016 — **Publication Award in Regenerative Medicine** (country-wide competition) – Charité
2016 — **Poster Prize** – Student Symposium on Molecular Medicine, Universität Ulm
2016 — **Poster Prize** – Myology Summer School, Max Delbrück Center Berlin
2015 — **Young Investigator Award** – Center for Musculoskeletal Surgery (CMSC), Charité
2010 — **Best Senior Design Project** – Dept. of Materials Sci. & Eng., GIK Institute, Pakistan

RESEARCH PUBLICATIONS (Total = 18; First/*Co-first authorship = 12; #Corresponding authorship = 2)

Under Review:

19. **Qazi TH**, Wu J, Muir VG, Weintraub S, Gullbrand S, Lee D, Issadore D, Burdick JA. Anisotropic rod-shaped particles influence injectable granular hydrogel properties and cell invasion. *bioRxiv* 2021.09.23.461542; doi: https://doi.org/10.1101/2021.09.23.461542.

Published:

18. **Qazi TH**, Duda GN. Special Issue: Immunomodulatory Biomaterials, *Acta Biomaterialia* 133, 1-3, 2021

17. Muir VG, **Qazi TH**, Shan J, Groll J, Burdick JA. Influence of microgel fabrication technique on granular hydrogel properties, *ACS Biomaterials Science and Engineering* 9, 4269-4281, 2021

16. **Qazi TH**, Burdick JA. Granular hydrogels for endogenous tissue repair, *Biomaterials and Biosystems* 1, 100008, 2021

15. Tytgat L*, Kollert M*, Van Damme L, Thienpont H, Ottevaere H, Duda GN, Geissler S, Dubruel P, Van Vlierberghe S#, **Qazi TH**#. Evaluation of 3D-printed gelatin-based scaffolds with varying pore size for MSC-based adipose tissue engineering, *Macromolecular Bioscience* 1900364, 2020

14. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Niche-mimicking interactions in peptide-functionalized 3D hydrogels amplify mesenchymal stromal cell paracrine effects, *Biomaterials* 230, 119639, 2020

13. **Qazi TH***, Tytgat L*, Dubruel P, Duda GN, Van Vlierberghe S#, Geissler S#. Extrusion printed scaffolds with varying pore size as modulators of MSC angiogenic paracrine effects, *ACS Biomaterials Science and Engineering* 5 (10), 5348-5358, 2019

12. Xiang G, Lippens E, Hafeez S, Duda GN, Geissler S, **Qazi TH**#. Oxidized alginate beads for tunable release of osteogenically potent mesenchymal stromal cells, *Materials Science and Engineering C* 104, 109911, 2019

11. **Qazi TH**, Duda GN, Ort MJ, Perka C, Geissler S#, Winkler T#. Cell therapy to improve regeneration of skeletal muscle injuries, *Journal of Cachexia, Sarcopenia and Muscle* 10, 501-516, 2019

10. Andrzejewska A, Catar R, Schoon J, **Qazi TH**, Sass FA, Jacobi D, Blankenstein A, Reinke S, Krueger D, Streitz M, Schlickeiser S, Richter S, Souidi N, Beez C, Kamhieh-Milz J, Krueger U, Zemojtel T, Juerchott K, Strunk D, Reinke P, Duda G, Molld G, Geissler S. Multi-parameter analysis of biobanked human bone marrow stromal cells shows little influence for donor age and mild comorbidities on phenotypic and functional properties, *Frontiers in Immunology* 10, 2474, 2019

9. Tytgat L, Markovic M, **Qazi TH**, Vagenende M, Bray F, Martins JC, Rolando C, Thienpont H, Ottevaere H, Ovsianikov A, Dubruel P, Van Vlierberghe S. Photo-crosslinkable recombinant collagen mimics for tissue engineering applications, *Journal of Materials Chemistry B* 7, 3100-3108, 2019

8. **Qazi TH**, Berkmann JC, Schoon J, Geißler S, Duda GN, Boccaccini AR[#], Lippens E[#]. Dosage and composition of bioactive glasses differentially regulate angiogenic and osteogenic response of human MSCs, *Journal of Biomedical Materials Research: Part A* 106 (11), 2827-2837, 2018

7. Berg J, Hiller T, Kissner MS, **Qazi TH**, Duda GN, Hocke AC, Hippenstiel S, Elomaa L, Weinhart M, Fahrenson C, Kurreck J. Optimization of cell-laden bioinks for 3D bioprinting and efficient infection with influenza A virus, *Scientific Reports* 8, 13877, 2018

6. **Qazi TH**, Mooney DJ, Duda GN, Geißler S. Biomaterials that promote cell-cell interactions enhance the paracrine function of MSCs, *Biomaterials* 140, 103-114, 2017

5. **Qazi TH**, Hafeez S, Schmidt J, Duda GN, Boccaccini AR, Lippens E. Comparison of the effects of 45S5 and 1393 bioactive glass microparticles on hMSC behavior, *Journal of Biomedical Materials Research: Part A* 105A, 2772–2782, 2017

4. Pumberger M*, **Qazi TH***, Ehrentraut MC, Textor M, Kueper J, Stoltenburg-Didinger G, Winkler T, von Roth P, Reinke S, Borselli C, Perka C, Mooney DJ, Duda GN[#], Geißler S[#]. Synthetic niche to modulate regenerative potential of MSCs and enhance skeletal muscle regeneration, *Biomaterials* 99, 95-108, 2016

   *Highlighted as Editor's Choice in **Science Translational Medicine**. "Stem cells flex their muscle regenerative potential" https://stm.sciencemag.org/content/8/342/342ec93*

3. **Qazi TH**, Mooney DJ, Pumberger M, Geißler S, Duda GN. Biomaterials based strategies for skeletal muscle tissue engineering: Existing technologies and future trends, *Biomaterials* 53, 502-521, 2015

2. **Qazi TH**, Rai R, Boccaccini AR. Tissue engineering of electrically responsive tissues using polyaniline based polymers: A review, *Biomaterials* 35, 9068-9086, 2014

1. **Qazi TH**, Rai R, Dippold D, Roether JE, Schubert DW, Rosellini E, Barbani N, Boccaccini AR. Development and characterization of novel electrically conductive PANI–PGS composites for cardiac tissue engineering applications, *Acta Biomaterialia* 10, 2434-2445, 2014

FUNDING & GRANTSMANSHIP

Year	Total Value	Details
2021-2026	~$1,500,000	NIH R01 PI: **Jason Burdick** Percentile: 5th. Impact score: 22 Role: Conception, Figures, ~50% of Writing.
2019-2022	€ 170,316	German Research Foundation (DFG) Research Fellowship PI: **Taimoor H. Qazi** Role: Conception, Writing, Figures

2017-2019	€ 90,000	Berlin-Brandenburg Center for Regenerative Therapies (BCRT) Postdoctoral Fellowship PI: **Taimoor H. Qazi** Role: Conception, Writing, Figures, Pitching
2017-2018	€ 10,000	Einstein Center for Regenerative Therapies Collaborative Research Grant Co-PIs: **Taimoor H. Qazi** (Charité), Johanna Berg (TU Berlin) Role: Establishing collaboration, Brainstorming, Writing, Pitching
2016	€ 1000	Charité Berlin Travel Grant for World Biomaterials Congress PI: **Taimoor H. Qazi** Role: Writing, Pitching
2014-2015	€ 20,000	Berlin-Brandenburg Center for Regenerative Therapies (BCRT) Collaborative Research Grant Co-PIs: **Taimoor H. Qazi** (Charité), Arunima Murgai (FU Berlin) Role: Establishing collaboration, Brainstorming, Writing, Pitching
2012	€ 1000	University of Erlangen-Nuremberg Travel Grant for German Society of Biomaterials Annual Meeting PI: **Taimoor H. Qazi** Role: Writing

CONFERENCE CONTRIBUTIONS (as presenting author)

Oral Presentations

1. **Qazi TH**, Pumberger M, Winkler T, Geissler S, Mooney DJ, Duda GN. Utilizing Multifunctional Alginate Scaffolds for the Regeneration of Skeletal Muscle Defects in a Rat Crush Trauma Model. *Annual Meeting of the European Society of Biomaterials (ESB)*, Liverpool, UK. 08.2014

2. **Qazi TH**, Pumberger M, Winkler T, Geissler S, Mooney DJ, Duda GN. Harnessing Paracrine Factors from Stimulated MSCs to Promote Skeletal Muscle Regeneration. *BSRT Student Symposium on Regenerative Therapies*, Berlin, Germany. 12.2015

3. **Qazi TH**, Pumberger M, Mooney DJ, Duda GN, Geissler S. The Influence of Biomaterial-Based Growth Factor Delivery on the Regeneration of Skeletal Muscle After Clinically Relevant Crush Trauma. *World Biomaterials Congress*, Montreal, Canada. 05.2016

4. **Qazi TH**, Pumberger M, Mooney DJ, Duda GN, Geissler S. MSCs Delivered Using Structurally Optimized Hydrogels Enhance Skeletal Muscle Regeneration by Paracrine Mechanisms. *TERMIS World Conference*, Kyoto, Japan. 09.2018 [*Invited Talk]*

5. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Hydrogel Based Regulation of Cell-Cell Interactions Enhances Trophic Activity of MSCs. *TERMIS World Conference*, Kyoto, Japan. 09.2018

6. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Mimicking N-cadherin Interactions via Engineered Hydrogels Confers Growth Factor Sensitivity and Enhances Paracrine Activity of Mesenchymal Stromal Cells. *Annual Meeting of the European Society of Biomaterials (ESB),* Maastricht, Netherlands. 09.2018

7. **Qazi TH**, Fuchs M, Pumberger M, Duda GN, Geissler S. Hydrogel Based Mesenchymal Stromal Cell Delivery Improves Muscle Regeneration via Local Modulation of $CD4^+$ and $CD8^+$ T Cell Levels. *Annual Meeting of the European Society of Biomaterials (ESB)*, Maastricht, Netherlands. 09.2018

8. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Regulation of Cell-Cell Interactions in Hydrogels to Modulate MSC Paracrine Effects. *BMES Annual Meeting*, Philadelphia, USA. 10.2019

9. **Qazi TH**, Burdick JA. Injectable Granular Hydrogels with Tunable Porosity to Promote Cell and Vessel Invasion. *Annual Meeting of the Society for Biomaterials (SFB)*, Virtual. 04.2021

10. **Qazi TH**, Burdick JA. Tuning Granular Hydrogel Porosity to Modulate 3D Endothelial Cell Sprouting. *Annual Meeting of the Society for Biomaterials (SFB)*, Virtual. 04.2021

Poster Presentations

1. **Qazi TH**, Borselli C, Geissler S, Winkler T, Mooney DJ, Duda GN. Multifunctional Alginate Scaffolds as Cell Carriers for the Regeneration of Skeletal Muscle Defects. *BSRT Student Symposium on Regenerative Therapies*, Berlin, Germany. 12.2013

2. **Qazi TH**, Pumberger M, Winkler T, Geissler S, Mooney DJ, Duda GN. Multifunctional Alginate Scaffolds to Facilitate Cell based Therapeutics for Skeletal Muscle Regeneration. *Architectured Biomaterials Symposium at French Embassy,* Berlin, Germany. 11.2014

3. **Qazi TH**, Duda GN, Pumberger M, Lauster R, Mooney DJ, Geissler S. A Biomaterial Strategy to Utilize Mesenchymal Stromal Cell Paracrine Secretion for Skeletal Muscle Regeneration. *Tag Der Biotechnologie (Biotechnology Day)*, Technical University of Berlin, Germany. 07.2015

4. **Qazi TH**, Pumberger M, Winkler T, Geissler S, Mooney DJ, Duda GN. Harnessing Paracrine Factors from Stimulated MSCs to Promote Skeletal Muscle Regeneration. *Interface Biology of Implants Conference*, Warnemuende, Germany. 04.2015

5. **Qazi TH**, Duda GN, Pumberger M, Lauster R, Mooney DJ, Geissler S. A Biomaterial Strategy to Utilize Mesenchymal Stromal Cell Paracrine Secretion for Skeletal Muscle Regeneration. *Gordon Research Seminar and Conference, Biomaterials and Tissue Engineering*, Girona – Costa Brava, Spain. 07.2015

6. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Modulating Regenerative Potential of MSCs for Muscle Regeneration. *9th Student Symposium on Molecular Medicine*, University of Ulm, Germany. 04.2016

7. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Modulating the Regenerative Potential of Stem Cells for Muscle Regeneration after Acute Trauma. *Myograd Summer School* – Max Delbrueck Center for Molecular Medicine, Berlin, Germany. 06.2016

8. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Sensitivity of MSCs to Soluble Growth Factor Cues in Macroporous and Nanoporous 3D Microenvironments. *Annual Meeting of the European Chapter of TERMIS*, Davos, Switzerland. 06.2017

9. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Biomaterial Based Modulation of the Mesenchymal Stromal Cell Secretome. *Annual Meeting of the European Chapter of TERMIS*, Davos, Switzerland. 06.2017

10. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Biomaterial Based Modulation of the Mesenchymal Stromal Cell Secretome. *Advanced Materials for Biomedical Applications (AMBA) Conference*, Ghent, Belgium. 09.2017

11. **Qazi TH**, Tytgat L, Duda GN, Dubruel P, Van Vlierberghe S, Geissler S. Optimized Porosity of 3D Printed Gelatin Methacrylamide Scaffolds Promotes Angiogenic Behavior of Human Mesenchymal Stromal Cells. *TERMIS World Conference*, Kyoto, Japan. 09.2018

12. **Qazi TH**, Mooney DJ, Duda GN, Geissler S. Hydrogels that Promote Cell-Cell Interactions Enhance Therapeutic Activity of Mesenchymal Stromal Cells. *TERMIS World Conference*, Kyoto, Japan. 09.2018

13. **Qazi TH**, Fuchs M, Duda GN, Geissler S. Mesenchymal Stromal Cells Enhance Muscle Regeneration via Immunomodulatory Paracrine Signaling. *Drexel Symposium on Immune Modulation and Engineering*, Philadelphia, USA. 10.2019

BOOK CHAPTER

1. **Qazi TH**, Duda GN. "Endogenous strategies in tissue engineering", Comprehensive Biomaterials II (editors: Healy K, Hutmacher DW, Grainger DW, Kirkpatrick CJ) Elsevier 2017 329-342

PATENT APPLICATION

1. Schmidt-Bleek K, Volk HD, Wendler S, Duda GN, Reinke S, Geissler S, **Qazi TH**, Dienelt A, Schell H. "Immunomodulation for prevention of poor healing of musculoskeletal injuries in compromised patients", US Patent Application No: 20200197341

TEACHING

Classroom Lectures:

2014/'15/'16 'Introduction to Biomaterials for Tissue Engineering' guest lecture for 3rd year Medical Students
Charité Medical University Berlin

Hands-on Lab Demonstrations:

2019	'Introduction to Tissue Engineering' for undergraduate and graduate students University of Pennsylvania
2014/'15/'16	'Introduction to Biomaterials for Tissue Engineering' for Medical Students Charité Medical University Berlin
2014/'15/'16	'Introduction to 3D Cell Culture' for Medical Students Charité Medical University Berlin

MENTORING & SUPERVISION

Doctoral Students

2020-present	Cameron Thompson (University of Pennsylvania)
2018-present	Matthias Kollert (Charité Medical University Berlin)
2017-present	Georgios Kotsaris (Charité Medical University Berlin)

Master's Students

2017-2019	Gao Xiang (Charité Medical University Berlin)
2015-2017	Shahzad Hafeez (Charité Medical University Berlin)

Undergraduate Students

2015-2016	Mareike Rentzsch (Free University of Berlin)
2014-2015	Miriam Rodi (Free University of Berlin)
2011-2012	Dirk Dippold (University of Erlangen-Nuremberg)

High School Students

2014	Chiara Erfurt (Nelson Mandela School Berlin)

ACADEMIC SERVICE

2020-2021	Guest Co-Editor: Special Issue on Immunomodulatory Biomaterials Acta Biomaterialia (Elsevier)
2020-2021	Trainee Leadership Council Member: Center for Engineering MechanoBiology (CEMB) University of Pennsylvania
2018-2019	Intramural grant reviewer: Einstein Center for Regenerative Therapies Charité Medical University Berlin
2017	Co-Chair: scientific session 'Bioengineered Stem Cell Niches' TERMIS-EU in Davos, Switzerland
2015-2016	Organizer: Weekly scientific symposium for doctoral students Julius Wolff Institute, Charité Medical University Berlin

2014 — Interviewer: Doctoral student recruitment event for the Berlin-Brandenburg School for Regenerative Therapies
Charité Medical University Berlin

2008-2009 — Event Chair: MaTTech '09 – Pakistan's premier student-led national conference on materials technologies, GIK Institute Pakistan

JOURNAL PEER REVIEW (Ad hoc; ~7/yr.)

Independent:

Advanced Healthcare Materials / ACS Biomaterials Science and Engineering / Acta Biomaterialia / Journal of Materials Chemistry B / Biofabrication / Journal of Biomedical Materials Research: Part A / Biomedical Materials / Biomacromolecules / Journal of Biomaterials Science: Polymer Edition / Materials Science and Engineering C / Nanoscale / Materials Letters / Journal of Materials Science: Materials in Medicine

With mentors:

Science Advances / Advanced Functional Materials / Biomaterials