

## CURRICULUM VITAE

### Associate Professor Bilal E. Kerman

Istanbul Medipol University  
Department of Histology and Embryology  
Regenerative and Restorative Medicine Research Center  
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- **EDUCATION**

- Aug 2009-Apr 2015 Post-doctoral Research Fellow  
**Salk Institute, La Jolla, CA USA**
- Sep 2001-Jul 2009 Ph.D., Biochemistry, Cellular and Molecular Biology  
**Johns Hopkins University, Baltimore, MD USA**
- Sep 1997-Jun 2001 B.S., Department of Molecular Biology and Genetics  
**Bilkent University, Ankara Turkey**

- **CURRENT POSITIONS**

- Nov 2018-Present Associate Professor  
Department of Histology and Embryology  
Regenerative and Restorative Medicine Research Centre  
**Istanbul Medipol University, Istanbul Turkey**
- Sep 2017-Present Scientific Advisor  
Microscopy applications on in vitro platforms  
**Argenit Micro Systems, Istanbul Turkey**

- **PREVIOUS POSITION**

- May 2015-Nov 2018 Assistant Professor  
Department of Histology and Embryology  
Regenerative and Restorative Medicine Research Centre  
**Istanbul Medipol University, Istanbul Turkey**
- Aug 2009-Apr 2015 Post-doctoral Research Fellow  
Advisor: Prof. Fred H. Gage  
Laboratory of Genetics  
**Salk Institute, La Jolla, CA USA**

- **RECENT RESEARCH EXPERIENCE**

- May 2015-Present Principle Investigator  
**Istanbul Medipol University, Istanbul Turkey**  
Investigating myelination and demyelination through cell culture, advanced imaging, and bioinformatics.  
Applying the acquired information to understand myelination disorders and to develop therapies for myelin disorders.  
Developing methodologies for diagnosis and treatment of neurological diseases in collaboration with researchers from industry and academia.

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- Aug 2009-Apr 2015      Post-doctoral Research Fellow; Advisor: Prof. Fred H. Gage  
**Salk Institute, La Jolla, CA USA**  
Developed a stem cell-based myelination assay and a myelin quantification software.  
Analyzed a therapeutic molecule to on an in vitro myelination disease model.  
Collaborated in investigating transposons.  
Established an imaging and evaluation strategy for comparing human and nonhuman neural progenitors derived from induced pluripotent stem cells.  
Contributed to in vitro exploration of Huntington disease.
- Sep 2001-Jul 2009      Doctoral Research Fellow; Advisor: Prof. Deborah J. Andrew  
**Johns Hopkins University, Baltimore, MD USA**  
Doctoral thesis titled “Formation and maintenance of epithelial tubes: from mechanics to cell death”  
Described the molecular basis for tissue mechanics during tube formation using a combination of genetics, cell biology, imaging and computer modeling.  
Mapped a mutation of interest to the *dalmation* gene and described its function in the development and maintenance of the *Drosophila* salivary duct.

### • PRIZES AND AWARDS

- 2018                      **Marie Sklodowska-Curie Actions**, Seal of Excellence
- 2017                      **Turkish Academy of Sciences**, Young Investigator Award
- 2016-2018              **The Scientific and Technological Research Council of Turkey (TUBITAK)**,  
Returnee Research Fellowship
- 2007                      **Johns Hopkins University**, Department of Cell Biology, Lewis Travel Award  
for attendance at 2007 Drosophila Research Conference
- 1997-2001              **Bilkent University**, Undergraduate Scholarship Award
- 1997-2001              **The Scientific and Technological Research Council of Turkey (TUBITAK)**,  
Achievement Scholarship
- 1997                      **International Biology Olympiad**, Bronze Medalist

### • PATENT

- Engin, O., Guzel, M., **Kerman, BE.**, Mansoor, S., Durdagi, S., Unal, B., Kaya, M., and Ustundag Okur, N. Development of novel therapeutic molecules with capability of targeting multiple receptors for treatment of Parkinson’s disease. *Patent Pending (PCT/TR2018/05166)*.

### • FUNDING

#### As Principal Investigator

- Mar 2019-Mar 2022      Identification of Biomarkers and Candidate Pathways for Therapy of Multiple Sclerosis via Interactome Analysis  
The Scientific and Technological Research Council of Turkey  
681 000 TL (approximately \$121 000)
- May 2018-May 2021      Development of Fluorescence Imaging and Analysis Tools for Myelin Quantification and Investigation of Myelin Mechanics  
European Cooperation in Science and Technology (COST) Action *A new Network of European BioImage Analysts to advance life science imaging (NEUBIAS)* and The Scientific and Technological Research Council of Turkey  
322 000 TL (approximately \$93 000)

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- Mar 2016-Mar 2019 Investigation of Myelin Membrane Expansion Dynamics of the Central Nervous System  
The Scientific and Technological Research Council of Turkey  
360 000 TL (approximately \$104 000)
- Jun 2018-Jun 2019 Myelin Interactome: Identification Of Cell-Cell Interactions In Multiple Sclerosis Via Bipartite Graph Based Protein-Protein Interaction Networks  
Istanbul Medipol University Internal Research Grant  
23 000 TL (approximately \$4 000)
- Nov 2016-Dec 2018 Modelling Myelination and Myelin Disorders  
Turkish Academy of Sciences  
60 000 TL (approximately \$17 000)

### Completed Projects

- Oct 2017-Jul 2018 Investigation of effect of macrophages on neural cells of the central nervous system  
The Scientific and Technological Research Council of Turkey  
30 000 TL (approximately \$8 500)
- Apr 2016-Apr 2018 An Induced Pluripotent Stem Cell-based Multiple Sclerosis Model  
The Scientific and Technological Research Council of Turkey  
30 000 TL (approximately \$8 500)
- Jul 2016-Jan 2018 Investigating HRP3's role in biology of myelinating oligodendrocytes and Schwann cells  
The Scientific and Technological Research Council of Turkey  
60 000 TL (approximately \$17 000)

### As Participating Researcher

- Jan 2018-Dec 2021 Automated Functional Screening Of IgGs For Diagnostics of Neurodegenerative Diseases  
Marie Skłodowska-Curie Research and Innovation Staff Exchange  
European Commission  
Total: 954 000 € (approximately \$ 1 130 000; My share is \$112 500)
- Sep 2017-Sep 2020 Development of novel therapeutic molecules with capability of targeting multiple receptors for treatment of Parkinson's disease  
European Cooperation in Science and Technology (COST) Action *Multi-target paradigm for innovative ligand identification in the drug discovery process (MuTaLig)* and The Scientific and Technological Research Council of Turkey  
Total: 360 000 TL (approximately \$104 000; My share is \$10 000)
- Sep 2017-Sep 2019 Dual Mode and Multi-wavelength 3D Quantitative Phase and Fluorescence Microscopy  
European Cooperation in Science and Technology (COST) Action *Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare (MOBIEU)* and The Scientific and Technological Research Council of Turkey  
Total: 360 000 TL (approximately \$104 000; My share is \$8 500)

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### • KNOWLEDGE TRANSFER

- **Contribution to Science Magazine NextGen Voices: Quality Mentoring (Outreach)**  
**2018**, contributed to the letter on describing a mentor that was published by the Science Magazine. An excerpt “*Mentors who feel responsible for the well-being of their mentees bind the entire lab together.*” The entire comment and the article can be reached at:  
<http://science.sciencemag.org/content/362/6410/22>
- **Microscopy applications on in vitro platforms (Industrial Innovation)**  
**2017-Present**, initiated collaboration with **Argenit Micro Systems**, an R&D company focusing on developing innovative microscopy solutions. Obtained funding from sources within Turkey and European Union. Working closely with engineering scientists to develop 1) a myelin quantification software based on machine learning and 2) an automated imaging platform for diagnosis of amyotrophic lateral sclerosis (ALS) and other neurodegenerative diseases in collaboration with an international group of scientists from six countries.
- **Therapeutic molecule development for Parkinson’s disease treatment (Industrial Innovation)**  
**2017-Present**, Planned the strategy to screen novel molecules targeting multiple receptors related to Parkinson’s disease. Identified cell line to be used. Designed the quantification method. International patent application is pending (PCT/TR2018/05166).
- **High School Students’ Research Project (Outreach)**  
**2016-2017**, oversaw one research project with participation of 3 students from Kabatas High School, Istanbul, Turkey and 2 undergraduate students. Guided the design and implementation of the experiments. Mentored students in data analysis and presentation.
- **Communicating Science: Improvscience Workshop (Outreach)**  
**2014**, Attended the workshop (<http://improvscience.org/>) to improve communication skills. Practiced presenting my research creatively and effectively. Improved using spoken and body languages through group exercises.
- **Quantification of Myelination (Industrial Innovation)**  
**2009-2012**, developed the assay system and computer application for rapid and efficient myelin quantification. Led a diverse group of academic group of scientists. Kept the communication with **Sanofi** industrial group constant with monthly meetings. Balanced the needs of industry and academic requirements.

### • INVITED PRESENTATIONS

1. 2019 **Neurodegeneration Symposium**, Altinbas University, Istanbul, Turkey
2. 2018 **Marmara University**, School of Medicine, Department of Histology and Embryology, Istanbul, Turkey
3. 2018 **Gebze Technical University**, Department of Bioengineering, Kocaeli, Turkey
4. 2018 **“Prof.Dr. Mustafa KARAMAN” Biomedical Image Analysis Workshop**, Istanbul Technical University, Informatics Institute, Istanbul, Turkey
5. 2018 **Hacettepe University**, Institute of Neurological Sciences and Psychiatry, Ankara, Turkey
6. 2017 **Friedrich-Alexander University**, Department of Molecular Neurology, Erlangen, Germany  
Institute of Biochemistry, Erlangen, Germany
7. 2017 **Istanbul Arel University**, Department of Molecular Biology and Genetics, Istanbul, Turkey
8. 2016 **Johns Hopkins University**, Department of Biophysics, Baltimore, MD USA
9. 2016 **Istanbul University IUGEN Winter School**, Istanbul, Turkey

## **CURRICULUM VITAE – Bilal E. Kerman**

10. 2016 **BioLaw Science Talks Annual Meeting**, Canakkale, Turkey
11. 2015 **Molecular Biology Society of Turkey Annual Congress**, Ankara, Turkey
12. 2015 **Istanbul Technical University**, Department of Molecular Biology and Genetics, Istanbul, Turkey
13. 2015 **BioLaw Science Talks Annual Meeting**, Canakkale, Turkey
14. 2014 **Koc University**, College of Science, Istanbul, Turkey

### **• MENTORSHIP EXPERIENCE**

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|-------------------|--|
| 2016-Present      | Advisor of 1 Master Student and 4 Ph.D. Students<br><b>Istanbul Medipol University, Istanbul Turkey</b>                |
| 2016-2018         | Completed Master Thesis, Burcu Kurt Vatandaslar and Esref Celik<br><b>Istanbul Medipol University, Istanbul Turkey</b> |
| 2014-2015         | Oversaw 1 Masters' Thesis Research Project; Advisor: Prof. Fred H. Gage<br><b>Salk Institute, La Jolla, CA USA</b>     |
| 2013-2014         | Oversaw 1 Honor's Thesis Research Project; Advisor: Prof. Fred H. Gage<br><b>Salk Institute, La Jolla, CA USA</b>      |
| Jan 2006-May 2006 | Substitute Trainer for JHMI Microscope Facility<br><b>Johns Hopkins University, Baltimore, MD USA</b>                  |

### **• RECENT TEACHING EXPERIENCE**

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|--------------|---|
| 2015-Present | Lecturer for Histology and Embryology-1, Histology and Embryology-2<br>International School of Medicine, School of Medicine, & School of Dentistry<br><b>Istanbul Medipol University, Istanbul Turkey</b> |
| 2018-Present | Class Coordinator for International School of Medicine<br><b>Istanbul Medipol University, Istanbul Turkey</b>   |
| 2016-2018    | Associate Class Coordinator for International School of Medicine<br><b>Istanbul Medipol University, Istanbul Turkey</b>   |
| 2017-2018    | Lecturer for Physics of Light Microscopy<br>Graduate School of Health Sciences<br><b>Istanbul Medipol University, Istanbul Turkey</b>   |
| 2015-2016    | Organizer of Graduate Student Journal Club<br>Department of Histology and Embryology<br><b>Istanbul Medipol University, Istanbul Turkey</b>   |

### **• PROFESSIONAL ASSOCIATIONS**

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|--------------|--|
| 2010-Present | <b>Society for Neuroscience</b>                    |
| 2015-Present | <b>Molecular Biology Society of Turkey</b>         |
| 2017-Present | <b>Turkish Society of Histology and Embryology</b> |
| 2017-Present | <b>Neuroscience Society of Turkey</b>              |

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### • LEADERSHIP ACTIVITIES

Feb 2014-April 2015 Executive Board Member

**Association of Turkish Americans – Southern California, San Diego Chapter**  
San Diego, CA USA

Jan 2007-July 2009 Founding Board Member

**Johns Hopkins University Turkish Student Association**  
Baltimore, MD USA

### • PUBLICATIONS

1. Toy, MF., Kurt Vatandaslar, B., and **Kerman, BE.** (2019) Refractive index tomography of myelinating glial cells. *Published as a paper in the International Society for Optics and Photonics (SPIE) Proceedings* Quantitative Phase Imaging V, 1088713.
2. Marchetto, MC.\* , Hrvoj-Mihic, B.\* , **Kerman, BE.\*** , Yu, DX., Vadodaria, K., Linker, SB., Narvaiza, I., Santos, R., Denli, AM., Mendes, AD., Oefner, R., Cook, J., McHenry, L., Grasmick, JM., Heard, K., Fredlender, C., Moore, L., Kshirsagar, R., Xenitopoulos, R., Chou, G., Hah, N., Muotri, AR., Padmanabhan, K., Semendeferi, K., and Gage, FH. (2019) Species-specific maturation profiles of human, chimpanzee and bonobo neural cells. *\*Co-first authors. eLife* 8:e37527.
3. Cimen, S., Capar, A., Ekinici, DA., Ayten, UE., **Kerman, BE.**, and Toreyin, BU. (2018) DeepMQ: A Deep Learning Approach Based Myelin Quantification in Microscopic Fluorescence Images. *Published as a paper in the 26<sup>th</sup> European Signal Processing Conference 2018 (EUSIPCO)*: 61-65.
4. Santos, R., Vadodaria, K., Jaeger, BN., Mei, A., Lefcochilos-Fogelquist, S., Mendes, AD., Erikson, G., Shokhirev, M., Randolph-Moore, L., Fredlender, C., Dave, S., Fitzpatrick, C., **Kerman, BE.**, Charnay, P., Kelsoe, JR., Marchetto, MC., and Gage, FH. (2017) Differentiation of Inflammation-Responsive Astrocytes from Glial Progenitors Generated from Human Induced Pluripotent Stem Cells. *Stem Cell Reports* 8(6):1757-1769.
5. Kilic, U., Caglayan, AB., Beker, MC., Gunal, MY., Caglayan, B., Yalcin, E., Kelestemur, T., Gundogdu, RZ., Yulug, B., **Kerman, BE.**, and Kilic, E. (2017) Particular phosphorylation of PI3K/Akt on Thr308 via PDK-1 and PTEN mediates melatonin's neuroprotective activity after focal cerebral ischemia in mice\*. *Redox Biology* 12:657-665.  
  
\* This manuscript received **Prof. Dr. Altan GUNALP Research Award** at the XV. National Medical Biology and Genetics Congress (2017).
6. Aydinli, FI., Celik, E., Kurt Vatandaslar, B., and **Kerman, BE.** (2016) Myelin disorders and stem cells: as therapies, models. *Turkish Journal of Biology* 40(5):1068-1080.
7. Etle, B., **Kerman, BE.**, Valera, E., Gillmann, C., Schlachetzki, JC., Reiprich, S., Büttner, C., Ekici, AB., Reis, A., Wegner, M., Bäuerle, T., Riemenschneider, MJ., Masliah, E., Gage, FH., and Winkler, J. (2016)  $\alpha$ -Synuclein-induced myelination deficit defines a novel interventional target for multiple system atrophy. *Acta Neuropathologica* 132(1):59-75.
8. Denli, AM., Narvaiza, I., **Kerman, BE.**, Pena, M., Benner, C., Marchetto, MC., Aslanian, A., Ma, J., Hunter, T., Saghatelian, A., and Gage, FH. (2015) Identification of a novel open reading frame, ORF0, in primate LINE-1 retrotransposons. *Cell* 163(3):583-593.
9. **Kerman, BE.**, Kim HJ., Padmanabhan, K., Mei, A., Georges, S., Joens, MS., Fitzpatrick, JAJ., Japelli, R., Chandross, K., August, P., and Gage, FH. (2015) *In vitro* myelin formation using embryonic stem cells. *Development* 142(12):2213-25.
10. Crotti, A., Benner, C., **Kerman, BE.**, Gosselin, G., Lagier-Tourenne, C., Zuccato, C., Cattaneo, E., and Gage, F.H., Cleveland, DW, Glass, CK. (2014) Mutant Huntingtin promotes cell-autonomous microglia activation via myeloid lineage-determining factors PU.1 and C/EBP. *Nat Neurosci.* 17(4):513-21.

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11. Deshmukh, VA, Tardif, V, Lyssiotis, CA, Green, CC, **Kerman, B**, Kim, HJ, Padmanabhan, K, Swoboda, JG, Ahmad, I, Kondo, T, Gage, FH, Theofilopoulos, AN, Lawson, BR, Schultz, PG, Lairson, LL. (2013) A regenerative approach to the treatment of multiple sclerosis. **Nature**. 502(7471):327-32.
  12. **Kerman, BE**. and Andrew, DJ. (2010) Staying alive: Dalmatian mediated epigenetic blocking of apoptosis is essential for tissue maintenance. **Dev Dynamics**. 239(6):1609-21.
  13. Jattani, R., Patel, U., **Kerman, BE.**, and Myat, MM. (2009) Deficiency screen identifies a novel role for beta2 tubulin in salivary gland and myoblast migration in the Drosophila embryo. **Dev Dynamics** 238: 853-863.
  14. **Kerman, BE.\***, Cheshire, AM.\*, Myat, MM., and Andrew, DJ. (2008) Ribbon Modulates Apical Membrane During Tube Elongation through Crumbs and Moesin. **\*Co-first authors. Dev Biol** 320: 278-288.
  15. Cheshire, AM.\*, **Kerman, BE.\***, Zipfel, WR., Spector, AA., and Andrew, DJ. (2008) Kinetic and Mechanical Analysis of Live Tube Morphogenesis. **\*Co-first authors. Dev Dynamics** 237: 2874-2888.
  16. **Kerman, BE.**, Cheshire, AM., and Andrew, DJ. (2006) From fate to function: the Drosophila trachea and salivary gland as models for tubulogenesis. **Differentiation** 74: 326–348.
- **SELECTED CONFERENCE PRESENTATIONS**
    1. **Kerman, BE.**, Cimen, S., Capar, A., Ekinci, DA., Dursun, G., Bijelic, D., Korenic, A., Ayten, UE., Andjus, P., Ozkaya, U., and Toreyin, BU. (2019) Computer assisted methods for classification and analysis of neuroglial structures. *17<sup>th</sup> National Neuroscience Congress*. (Oral presentation)
    2. Cimen, S., Capar, A., Ekinci, DA., Ayten, UE., **Kerman, BE.\***, and Toreyin, BU. (2019) Automated Myelin Detection using Image Analysis. *The 3<sup>rd</sup> NEUBIAS Conference*. (Poster) **\*Corresponding & Presenting Author**
    3. Cimen, S., Capar, A., Ekinci, DA., Ayten, UE., Toreyin, BU., and **Kerman, BE.\***, (2018) Automated Myelin Quantification from CEM to DeepMQ. *The 2<sup>nd</sup> NEUBIAS Conference*. (Poster) **\*Corresponding & Presenting Author**
    4. **Kerman, BE.**, (2017) An in vitro approach to understanding myelination and myelin disorders. *15<sup>th</sup> International Congress of Histochemistry and Cytochemistry*. (Oral presentation)
    5. **Kerman, BE.**, (2017) Dissecting myelination and demyelination at high resolution. *15<sup>th</sup> National Neuroscience Congress*. (Oral presentation)
    6. **Kerman, BE.**, (2016) Comparison of Central and Peripheral Myelination Dynamics. *Turkish Society of Physiological Sciences National Physiology Congress*. (Oral presentation); Abstract published in **Acta Physiologica** 218:5-5
    7. **Kerman, BE.**, (2016) Modeling myelin formation and myelination disorders using stem cells. *XIII. National Histology and Embryology Congress*. (Poster)
    8. **Kerman, BE.**, Kim HJ., Mei, A., Padmanabhan, K., Georges, S., Joens, MS., Fitzpatrick, JAJ., Japelli, R., Chandross, K., August, P., and Gage, FH. (2013) A novel, embryonic stem cell-based myelination assay. *Society for Neuroscience Annual Meeting – CDRF Hot Topics in Stem Cell Biology*. (Oral presentation)
    9. **Kerman, BE.**, Kim HJ., Mei, A., Chandross, K., August, P., and Gage, FH. (2012) Development of an embryonic stem cell-based myelination assay. *International Society for Stem Cell Research Annual Meeting*. (Oral presentation)
    10. **Kerman, BE.**, Mei, A. Kim HJ., and Gage, FH. (2011) Development of an embryonic stem cell-based myelination assay. *Society for Neuroscience Annual Meeting*. (Poster)