

## Brief CV

### Dr. Akon Higuchi, Professor

#### The Eye Hospital of Wenzhou Medical University & Wenzhou Institute of Biomaterials and Engineering

##### 1. Current Positions

Professor of The Eye Hospital of Wenzhou Medical University,  
Professor of Wenzhou Institute of Biomaterials and Engineering  
Special Researcher in Riken (Japan) & NCH (Tokyo, Japan)  
Visiting Professor of King Saud University (Saudi Arabia)



##### 2. Education

Tokyo Institute of Technology	BSc.	1979	Polymer Science
University of Manchester Institute of Science and Technology (UK)		1980-1981	Exchange Student
Tokyo Institute of Technology	MSc.	1982	Polymer Science
Tokyo Institute of Technology	PhD.	1985	Polymer Science

##### 3. Appointments:

1986-1993	Assistant Professor, Dept. of Appl. Chem., Meiji University, Tokyo
1993-1999	Associate Professor, Dept. of Ind. Chem., Seikei University, Tokyo
1999-2007	Professor, Dept. of Mater. Life Sci., Seikei University, Tokyo
2007-2018	Chair Professor, Dept. of Chem. Mater. Eng., National Central University, Taiwan
2018-present	Professor, The Eye Hospital of Wenzhou Medical University
2018-present	Professor, Wenzhou Institute of Biomaterials and Engineering

##### 4. Honors and Awards/ Experience

1994	Sofue Memorial Award, Society of Fiber Science, Japan
2003	Seikei Academic Award, Seikei Alumni Association, Japan
2007	Chair Professor of National Central University (1.0 millionNT/year)
2009-2016	Editorial Board Member of Membrane Water Treatment (Techno-Press, SCI, Korea)
2010	Chair Professor of National Central University (1.0 millionNT/year)
2011-present	Editorial Board Member of World Journal of Stem Cells (WJSC, China)
2011-present	Council of Chemical Society of Japan, Division of Polymer Science
2012-present	Editorial Board Member of Journal of Membrane Separation Technology (Canada)
2012	Chair Professor of National Central University (1.2 millionNT/year)
2013	Nanotechnology Outstanding Contribution Award, National Science Council, Taiwan
2013-present	Editor in Chief of American Journal of Tissue Engineering & Stem Cell (Columbia International Publishing, USA)
2014-present	Editorial Board Member of Journal of Stem Cells Research, Development and Therapy (Herald Scholarly Open Access, USA)
2014-present	Editorial Board Member of Journal of Cytology and Tissue Biology (Herald Scholarly, USA)
2014-present	Associate Editor of Physics and Chemistry of Stem Cells (Walter de Gruyter, German)
2014-present	Advisory Board of Journal of Materials Chemistry B (Royal Society of Chemistry, SCI journal, Impact factor=4.776)
2014-2016	The Asia-Pacific (AP) Council of the Tissue Engineering and Regenerative Medicine International Society (TERMIS-AP)
2014-present	<b>Fellow, Royal Society of Chemistry</b> (England)
2015-present	<b>Fellow, Taiwan Chemical Engineering Society</b> (Taiwan)
2015-present	Editor, Open Physics (Walter de Gruyter, German, Impact factor=0.755)
2016	<b>Award of Royal Society of Chemistry</b> , Symposium 2016 of The Japanese Society for Biomaterials (Fukuoka, Japan)
2017-present	Editorial Board Member of Laboratory Investigation (Nature Springer, SCI journal, Impact factor=4.254)
2017-present	Editorial Board, Tissue Engineering and Regenerative Medicine, (Springer, Impact =1.216)
2018-present	<b>Fellow, American Institute for Medical &amp; Biological Engineering</b> (AIMBE, USA)

##### 5. Professional Specialty

Biomaterials, Stem cell engineering, Biomedical membranes, Bioseparation

##### 6. Research Fields

Isolation of stem cells from human tissue, Human pluripotent stem cell (ES and iPS cells) culture and differentiation

for clinical application, Adult stem cell culture and differentiation for clinical application, Generation of human iPSCs in safety conditions, preparation of nanobrush-grafted surface, culture and differentiation of stem cells on biomaterials under xeno-free conditions, reprogramming of human somatic cells into induced pluripotent stem cells (iPSCs), isolation of adipose-derived stem cells from human fat tissue by membrane filtration method

## 7. Selected Publications (Past 5 years)

- 1) A. Higuchi\*, S. S. Kumar, G. Benelli, A. A. Alarfaj, M. A. Munusamy, A. Umezawa, K. Murugan, Stem Cell Therapies for Reversing Vision Loss, *Trends in Biotechnology*, 35, Issue 11, 1102–1117 (2017). <SCI, Impact factor= **13.578**>
- 2) A. Higuchi\*, S. S. Kumar, Q.-D. Ling, A. A. Alarfaj, M. A. Munusamy, K. Murugan, S.-T. Hsu, G. Benelli, A. Umezawa, Polymeric design of cell culture materials that guide the differentiation of human pluripotent stem cells, *Prog. Polym. Sci.*, 65 (2017) 83-126. <SCI, Impact factor= **24.558**>
- 3) Peng IC, Yeh CC, Lu YT, Muduli S, Ling QD, Alarfaj AA, Munusamy MA, Kumar SS, Murugan K, Lee HC, Chang Y, Higuchi A,\* Continuous harvest of stem cells via partial detachment from thermoresponsive nanobrush surfaces, *Biomaterials*, 76 (2016) 76-86. <SCI, Impact factor= 8.387>
- 4) A. Higuchi, S.-H. Kao, Q.-D. Ling, Y.-M. Chen, H.-F. Li, A. A. Alarfaj, M. A. Munusamy, K. Murugan, S.-C. Chang, H.-C. Lee, S.-T. Hsu, S. S. Kumar, A. Umezawa, Long-term xeno-free culture of human pluripotent stem cells on hydrogels with optimal elasticity, *Scientific Reports*, 5, 18136 (2015). <SCI, Impact factor= 5.228, Nature Publication Group>
- 5) A. Higuchi, C.-T. Wang, Q.-D. Ling, H. H. Lee, S. S. Kumar, Y. Chang, A. A. Alarfaj, M. A. Munusamy, S.-T. Hsu, G.-J. Wu, A. Umezawa, A hybrid-membrane migration method to isolate high-purity adipose-derived stem cells from fat tissues, *Sci. Rep.*, 5 (2015) 10217. <SCI, Impact factor= 5.228, Nature Publication Group>
- 6) A. Higuchi,\* Q.-D. Ling,\* S. S. Kumar, Y. Chang, A. A. Alarfaj, M. A. Munusamy, K. Murugan, S.-T. Hsu, A. Umezawa, Physical cues of cell culture materials lead the direction of differentiation lineages of pluripotent stem cells, *J. Mater. Chem. B.*, 3 (2015) 8032 - 8058. <SCI, Impact factor= 4.872>
- 7) P.-Y. Wang, H. H. Lee, A. Higuchi, Qing-Dong Ling, Hong-Ren Lin, Hsin-Fen Li, S. Suresh Kumar, Yung Chang, Abdullah A Alarfaj, Murugan A Munusamy, Da-Chung Chen, Shih-Tien Hsu, Han-Chow Wang, Hung-Yi Hsiao and Gwo-Jang Wu, Pluripotency maintenance of amniotic fluid-derived stem cells cultured on biomaterials with different elasticities and grafted with ECM-derived oligopeptides, *J Mater Chem B.*, 3 (2015) 3858-3869. <SCI, Impact factor= 4.872>
- 8) A. Higuchi\*, Q.-D. Ling, S. S. Kumar, Y. Chang, T.-C. Kao, M. A. Munusamy, A. A. Alarfaj, S.-T. Hsu, A. Umezawa, External stimulus-responsive biomaterials designed for the culture and differentiation of ES, iPS, and adult stem cells, *Prog Polym. Sci.*, 39 (2014) 1585-1613. <SCI, Impact factor= **24.558**>
- 9) D.-C. Chen, L.-Y. Chen, Q.-D. Ling, M.-H. Wu, C.-T. Wang, S. S. Kumar, Y. Chang, M. A. Munusamy, A. A. Alarfaj, H.-C. Wang, S.-T. Hsu, A. Higuchi\*, Purification of human adipose-derived stem cells from fat tissues using PLGA/silk screen hybrid membranes, *Biomaterials*, 35 (2014) 4278-4287. <SCI, Impact factor= 8.387>
- 10) A. Higuchi\*, Q.-D. Ling, S. S. Kumar, M. A. Munusamy, A. A. Alarfaj, A. Umezawa, G.-J. Wu, Design of polymeric materials for culturing human pluripotent stem cells: Progress toward feeder-free and xeno-free culturing, *Prog. Polym. Sci.*, 39(7) (2014) 1348-1374. <SCI, Impact factor= **24.558**>
- 11) Fukawatase Y, Toyoda M, Okamura K, Nakamura K, Nakabayashi K, Takada S, Yamazaki-Inoue M, Nasu M, Hata K, Hanaoka K, Higuchi A, Takubo K, Umezawa A, Ataxia telangiectasia derived iPS cells show preserved x-ray sensitivity and decreased chromosomal instability, *Sci. Rep.*, 4 (2014) 5421 <SCI, Impact factor= 5.228>
- 12) S. S. Kumar, J.-S. Hsiao Q.-D. Ling, I. Dulinska-Molak, G. Chen, Y. Chang, Y. Chang, S.-T. Hsu, A. Higuchi\*, The combined influence of substrate elasticity and surface grafted molecules on the ex vivo expansion of hematopoietic stem and progenitor cells, *Biomaterials*, 34 (2013) 7632-7644. <SCI, Impact factor= 8.387>
- 13) A. Higuchi\*, Q.-D. Ling, A. Umezawa, Physical cues of biomaterials guide stem cell differentiation fate, *Chemical Reviews*, 113 (2013) 3297-3328. <SCI, Impact factor= **52.613**> **Highly Cited Paper**
- 14) C.-H. Wu, Fa-Kung Lee, S. S. Kumar, Q.-D. Ling, Y. Chang, Y. Chang, H.-C. Wang, H. Chen, D.-C. Chen, S.-T. Hsu, A. Higuchi\*, The Isolation and Differentiation of Human Adipose-Derived Stem Cells Using Membrane Filtration, *Biomaterials*, 33 (2012) 8228-8239. <SCI, Impact factor= 8.387>
- 15) A. Higuchi\*, Q.-D. Ling, S.-T. Hsu, A. Umezawa, Biomimetic Cell Culture Proteins as Extracellular Matrices for Stem Cell Differentiation, *Chemical Reviews*, 112 (2012) 4507-4540. <SCI, Impact factor= **52.613**>
- 16) L.-Y. Chen, Y. Chang, J.-S. Shiao, Q.-D. Ling, Y. Chang, S.-T. Hsu, H. H. Lee, A. Higuchi\*, Effect of the surface density of nanosegments immobilized on culture dishes on ex vivo expansion of hematopoietic stem and progenitor cells from umbilical cord blood, *Acta Biomaterialia*, 8 (2012) 1749-1758. <SCI, Impact factor= 6.008>
- 17) A. Higuchi\*, Q.-D. Ling, Y.-A. Ko, Y. Chang, A. Umezawa, Biomaterials for the feeder-free culture of human embryonic stem cells and induced pluripotent stem cells, *Chemical Reviews*, 111 (2011) 3021-3034. <SCI, Impact factor= **52.613**>