

## DR. KOYELI GIRIGOSWAMI

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### Qualifications:

Ph.D.: 2006, University of Kalyani, West Bengal

### Research Interests:

Mammalian cell culture, Cytotoxicity, Oxidative damage, Apoptosis, Mutation studies, Apoptotic gene expression, Synthesis of artificial amyloid lawn, Cell culture over synthesized lawn surfaces, Cytotoxicity & effect of metal ions on aggregation of Alzheimer's  $\beta$ -amyloid, Nanoparticle Toxicity using zebrafish model, enzymes isolated from natural sources for dissociation of amyloids, ZnO nanoflowers, nanosensors for detection of amyloids, role of ZnO nanoflower in amyloid dissociation, Nanoceria nanoclusters as ROS biosensors.

### Post-Doc / Work Experience:

- 1) 2013 – Present: **Assistant Professor** (Biophysics) (Sr. Grade), Faculty of Allied Health Sciences, Chettinad Hospital & Research Institute
- 2) 2008 – 2013: **Assistant Professor** (Biophysics), All India Institute of Hygiene & Public Health, **Govt. of India**, Kolkata, INDIA, from September 2008-2013
- 3) 2007-2008: Brain Korea 21 (BK21) Postdoctoral Researcher, Advanced Biomaterial Lab, Korea Advanced Institute of Science and Technology (KAIST), **SOUTH KOREA**

### Patents / GenBank Submissions:

#### Patent: 01

1. Chan Beum Park, Sook Hee Ku, Koyeli Girigoswami, and Jungki Ryu. Method for screening drug for neurodegenerative diseases treatment. Korean Patent: Appl. No. 10-2007-0112804 (2007. 11. 06) Patent No. 10-1082484-0000 (2011. 11. 02)

### Patents under Process-04

1. Sanjay K Metkar, Koyeli Girigoswami, Ramachandran Murugesan and Agnishwar Girigoswami, Denaturation of Amyloids by Lumbrokinase, submitted to Patent Office, Chennai on 09.10.2015, Ref. No. 5412/CHE/2015. Patent published on 14.4.2017 in The Patent Office Journal, India, 10756.
2. Sanjay K Metkar, Koyeli Girigoswami, Ramachandran Murugesan and Agnishwar Girigoswami, Degradation Process of Amyloid Fibrils by Serratiopeptidase, submitted to Patent Office, Chennai on 09.10.2015, Ref. No. 5415/CHE/2015.
3. Koyeli Girigoswami, Agnishwar Girigoswami, Ramachandran Murugesan and Najim Akhtar, Sensor For Amyloid Detection Based On ZnO Nanoflower Platform, submitted to Patent Office, Chennai on 11.01.2017, Appl. No. 201741001092.
4. Agnishwar Girigoswami, Haribabu V, Koyeli Girigoswami, Sharmila P, Label-free biocompatible magnetofluorescent nanoclusters for multimodal imaging, submitted to Patent Office, Chennai on 11.01.2017, Appl. No. 201741001085.

### Research Guidance:

Ph.D.:01

M.Sc.:03

### Summary of Research:

Papers	19	Citations	211	h-index	8	i10-index	7
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### Publications:

1. P. Sharmiladevi, V. Haribabu, K. Girigoswami, S.F. Abubacker, Agnishwar Girigoswami., Effect of Mesoporous Nano Water Reservoir on MR Relaxivity. **Scientific Reports**, (2017) 7: 11179, DOI:10.1038/s41598-017-11710-2
2. R. Deepika, K. Girigoswami, R. Murugesan, Agnishwar Girigoswami. , Influence of Divalent Cation on Morphology and Drug Delivery Efficiency of Mixed Polymer Nanoparticles, **Current Drug Delivery**, (2017) DOI: 10.2174/1567201814666170825160617.

3. Akhtar N, Metkar S.K., Girigoswami A & **Girigoswami K.** ,ZnO nanoflower based sensitive nano-biosensor for amyloid detection. **Mater. Sci. Eng. C.**, (2017) 78:960-968. ISSN: 09284931[I.F.= 4.164]
4. Metkar S.K., Girigoswami A., Murugesan R. & **Girigoswami K.**, Lumbrokinase for degradation and reduction of amyloid fibrils associated with amyloidosis. **J. Appl. Biomed.**, (2017) 15:96-104. [I.F.= 1.509]
5. Metkar S.K., Girigoswami A., Murugesan R. & **Girigoswami K.**, *In vitro* and *in vivo* insulin amyloid degradation mediated by Serratiopeptidase, **Mater. Sci. Eng. C.**, (2017) 70:728-735. ISSN: 09284931[I.F.= 4.164]
6. **Girigoswami K.** and Metkar S. K. , Magnetic Nanoparticles Synthesized with Different Precursor Stoichiometry Induced Differential Toxicity in Multiple Cell Lines; **Int. J. Sci. Res.**, (2015) 4(11): 2052-2057. ISSN: 2319-7064.
7. **Girigoswami K.**, Meenakshi V., Murugesan R. & Girigoswami A., Studies on Polymer-Coated Zinc Oxide Nanoparticles: UV-blocking Efficacy and *in vivo* Toxicity; **Mater. Sci. Eng. C.**, (2015) 56: 501-510. ISSN: 09284931 [I.F.= 4.164]
8. Ghosh R., **Girigoswami K.** & Guha D., Caspase Dependent Apoptosis is Only Inhibited on  $\gamma$  Irradiation of Cells Conditioned by Repetitive Oxidative Stress, **Int. J. Sci. Res.**, (2013) 2: 12-18. ISSN: 2319-7064.
9. Kavya J.C., Amsaveni G., Nagalakshmi M., **Girigoswami K.**, Murugesan R., Girigoswami A., Silver Nanoparticles Induced Lowering of BCL<sub>2</sub> / Bax Causes DLA Tumour Cell Death in Mice, **J Bionanosci.**, (2013) 7, 276-281. ISSN: 1557-7910.
10. Ghosh R., **Girigoswami K.** & Guha D., Suppression of apoptosis leads to cisplatin resistance in V79 cells subjected to chronic oxidative stress; **Ind. J Biochem. Biophys.**, (2012) 49: 363-370. [I.F. (2012)= 1.142] ISSN:0975- 0959 (Online); 0301-1208 (Print)
11. Ghosh R. & **Girigoswami K.**, Some spectrofluorimetric studies with intact cells exposed repetitively to low doses of oxidative stress: Proceedings of UGC Sponsored National Seminar on Modern trends in Spectroscopy: Its Application in Chemistry and Biology 2011, (Eds S. Bhattacharya & D.C.Guria), published by **Maulana Azad College**, Kolkata, W.B., INDIA, (2011) pp. 144-152. ISBN-13-978-81-928246-1-1.
12. **Girigoswami K.**, Ku S.K., Ryu J. & Park C.B., A synthetic amyloid lawn system for high-throughput analysis of amyloid toxicity and drug screening; **Biomaterials**, (2008) 29: 2813-2819. [I.F. (2009)=8.153] ISSN: 0142-9612

13. Ryu J., **Girigoswami K.**, Ha C. Ku S.K. & Park C.B., Influence of multiple metal ions on  $\beta$ -amyloid aggregation and dissociation on a solid surface; **Biochemistry**, (2008) 47: 5328-5335. [I.F. (2009)=3.226] ISSN:[0006-2960](#) (print);[1520-4995](#) (web).
14. Kanapathipillai M., Ku S.K., **Girigoswami K.** & Park C.B., Small stress molecules inhibit aggregation and neurotoxicity of prion peptide 106-126; **Biochem. Biophys. Res. Commun**, (2008) 365: 808-813. [I.F. (2009)=2.72] ISSN: 0006-291X
15. Ghosh R. & **Girigoswami K.**, NADH dehydrogenase subunits are overexpressed in cells exposed repeatedly to  $H_2O_2$ ; **Mutat. Res.**, (2008) 638: 210-215. [I.F. (2009)=3.764] ISSN: 0027-5107
16. **Bose (Girigoswami) K.** & Ghosh R., Response to  $\gamma$ -irradiation in V79 cells conditioned by repeated treatment with low doses of hydrogen peroxide; **Radiat. Environ. Bioph.**, (2005) 44: 131- 137. [I.F. (2006) =1.776. ISSN: 0301-634X (print version)ISSN: 1432-2099 (electronic version)
17. **Bose (Girigoswami) K.**, Bhaumik G. & Ghosh R., Induced resistance in cells exposed to repeated low doses of  $H_2O_2$  involves enhanced activity of antioxidant enzymes; **Cell Biol. Int.**, (2005) 29: 761-767. [I.F. (2006) =1.619] ISSN: 1065-6995
18. **Bose (Girigoswami) K.**, Bhaumik G. & Ghosh R., Chronic low dose exposure to hydrogen peroxide changes sensitivity of V79 cells to different damaging agents; **Ind. J Exp. Biol.**, (2003) 41: 832-836. [I.F.= 0.55] ISSN: 0975-1009 (Online); 0019-5189 (Print)
19. **Bose (Girigoswami) K.**, Bhaumik G. & Ghosh R., Low dose chronic exposure to oxidative stress changes sensitivity of V79 cells to different damaging agents by inhibiting apoptosis, in Proceedings of National Seminar on Recent Advances in Molecular Physiology, (Eds. N. Saha et al), published at **Kalyani University Press, Kalyani, (2002)** pp.144-150.

### Book Chapter

1. **Bose (Girigoswami) K.**, Bhaumik G. & Ghosh R. (2003); Chronic low doses of  $H_2O_2$  affect sensitivity of mammalian cells to different damaging agents through changes in their antioxidant enzyme status; in Recent Environmental Changes- Its Impact on Health, Agriculture and Ecosystem, (Ed. S.C Santra), **published by World View, Kolkata** on behalf of University of Kalyani, W.B., India, pp.201-210.

**Conference / Workshop / Invited Lecture / Resource person / Seminar /:**

## Papers presented at Conferences

**Total: 39 (25 International and 13 National)**

1. Sanjay Kisan Metkar and Koyeli Girigoswami, ZnO nanoflower based detection of insulin amyloids and its enzymatic degradation by Lumbricinase and Serratiopeptidase, SERB Sponsored National Conference on Nanotechnology in Medicine, 8<sup>th</sup> -9<sup>th</sup> September, **2017** held at Chettinad Hospital and Research Institute, Chennai.
2. Dhanavardhini K, Breghatha M, Weslen Vedakumari, Koyeli Girigoswami, Nanosponges: A Rapid Haemostatic Material, SERB Sponsored National Conference on Nanotechnology in Medicine, 8<sup>th</sup> -9<sup>th</sup> September, **2017** held at Chettinad Hospital and Research Institute, Chennai.
3. Rubiya R, Dhanavardhini K, Agnishwar Girigoswami, Koyeli Girigoswami, Photodynamic Therapy in Oral Cancer and Premalignant Lesions, 2<sup>nd</sup> International Conference on Novel Approaches in Cancer Research & Therapy (NACRAT-2017), 26-29<sup>th</sup> June, **2017** held at Saveetha Dental College, Chennai.
4. Sanjay Kisan Metkar and Koyeli Girigoswami, Insulin amyloid dissociation by Serratiopeptidase both *in vitro* and *in vivo*, National Seminar on Advanced Biomaterials and Applications, 15 th Feb **2017** held at Hindustan University, Padur, Chennai, India.
5. Guru Priya R. and Koyeli Girigoswami, Multiple uses of Silver Nanoparticles synthesized from *Ipomoea carnea*, International Conference on Environment and Health in Changing Climate-ICEHCC **2016**, 14-16<sup>th</sup> September, 2016 held at Bharathidasan University, Thiruchirapalli, Tamilnadu, INDIA.
6. Najim Akhtar and Koyeli Girigoswami, Detection of Amyloid through ZnO nanoflower based platform, International Conference on 'Modern Diagnostic Tools in Health Sciences', 22-23<sup>rd</sup> August, **2016** held at Dr. MGR Janaki College of Arts and Science for Women, Chennai, INDIA(1<sup>st</sup> Prize- Dr. MGR Centenary Award)
7. Sanjay K Metkar and Koyeli Girigoswami, Lumbricinase Extracted from Earthworm Degrades Insulin Amyloid *in vitro* and *in vivo*, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August **2016**, held B.S. Abdur Rahman University, Chennai, INDIA.
8. Shaoli De, Koyeli Girigoswami and Agnishwar Girigoswami, Nutraceuticals for Lifestyle Diseases, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August **2016**, held B.S. Abdur Rahman University, Chennai, INDIA.
9. S.Antinate Shilpa, M.Prabavath, and Koyeli Girigoswami, Nanocellulose Extracted from Bioresidues used for Drug Deliver, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August **2016**, held B.S. Abdur Rahman University, Chennai, INDIA.
10. Bhavana Murjani, Yashna Chabria, Devender, Koyeli Girigoswami, Therapeutic uses of hawthorn (*Crataegus Oxycantha*), International Conference on Applications of Natural Products

and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.

11. Elakkiya.K, Harini.S, Sanjeev Kumar.R, **Koyeli Girigoswami**, Multifunctional therapeutic effects of Jadwar (*Delphinium denudatum*), International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.
12. Dharshni T, Thendral V, Sanjayan C.G. and **Koyeli Girigoswami**, Aloe vera: nature's compliment for multiple impacts on health, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.
13. Selvajothi A, Sivakami M and **Koyeli Girigoswami**, Versatile Uses of Carica Papaya as Drug, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.
14. Sai Nievethitha S, Poornima R, **Koyeli Girigoswami**, Silk Fibroin for Nerve Tissue Engineering, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.
15. Monisha G, Arya K and **Koyeli Girigoswami**, Triphala and its Advantages, International Conference on Applications of Natural Products and Opportunities Ahead, 2-3 August 2016, held B.S. Abdur Rahman University, Chennai, INDIA.
16. Sanjay K Metkar, **Koyeli Girigoswami**, Ramachandran Murugesan and Agnishwar Girigoswami, Insulin Amyloid Degradation in vitro and in vivo by Lumbrokinase, Avidadham'16-International Conference on Recent Advances in Diagnosis and Treatment of Metabolic Disorders, 18-19 March 2016, held at Anna University, Chennai, INDIA.
17. Najim Akhtar, Sanjay K Metkar, Agnishwar Girigoswami and **Koyeli Girigoswami**, ZnO Nanoflower Platform: A Sensitive Amyloid Sensor, Avidadham'16-International Conference on Recent Advances in Diagnosis and Treatment of Metabolic Disorders, 18-19 March 2016, held at Anna University, Chennai, INDIA.
18. **Koyeli Girigoswami**, UV-blocking Efficacy and in vivo Toxicity of Polymer Coated Zinc Oxide Nanoparticles in Zebrafish Embryo, One Day International Seminar on Frontiers in Translational and Regenerative Biology, 31 January 2016, held at Centre for Research in Nanoscience and Nanotechnology, University of Calcutta, West Bengal, INDIA.
19. Sanjay K Metkar, **Koyeli Girigoswami**, Ramachandran Murugesan and Agnishwar Girigoswami. Dissociation of Insulin Amyloid in vitro and in vivo by Lumbrokinase, One Day International Seminar on Frontiers in Translational and Regenerative Biology, 31 January 2016, held at Centre for Research in Nanoscience and Nanotechnology, University of Calcutta, West Bengal, INDIA.
20. **Koyeli Girigoswami**. A High Throughput Screening System of Potential Drug Candidates for Alzheimer's Disease, National Conference on Application of Rapid Prototyping Techniques in

Biomaterials (ARTBM'15), 19-20 March 2015, held at Karpaga Vinayaka College of Engineering and Technology, Kancheepuram, Tamilnadu, INDIA.

21. **Koyeli Girigoswami**. Differential effect of multiple metal ions on beta amyloid aggregation and dissociation over a solid surface, International Conference on Recent Discoveries of Diabetic Biomarkers and Challenges Ahead, 2-3 March 2015, held at School of Life Sciences, B.S. Abdur Rahman University, Chennai, Tamilnadu, INDIA. (Best oral presentation)
22. **Koyeli Girigoswami** and Agnishwar Girigoswami. The aggregation and neurotoxicity of prion peptide 106-126 is inhibited by small stress molecules (SSMs), DBT Sponsored National Conference on Bioactive Peptides-Application in Veterinary, Medical and Food Science (NBAP-TANUVAS-2014), 18-19 December 2014, held at Department of Biotechnology, Madras Veterinary College, Madras, Tamilnadu, INDIA. (Best Poster Award)
23. Rita Ghosh, **Koyeli Girigoswami** and Dipanjan Guha. Suppression of apoptosis leads to cisplatin resistance in cells subjected to chronic oxidative stress, International Conference on Free Radicals, Antioxidants and Nutraceuticals in Health, Disease and Radiation Biology & SFRR-India Meeting, 11-12 Jan 2012, held at College of Medicine & JNM Hospital, WBUHS, Kalyani, INDIA.
24. Rita Ghosh and **Koyeli Girigoswami**. Some spectrofluorimetric studies with intact cells exposed repetitively to low doses of oxidative stress: UGC Sponsored National Seminar on Modern trends in Spectroscopy: Its Application in Chemistry and Biology 2011, 3-4 Feb 2011, held at Indian Association for Cultivation of Science, Jadavpur, Kolkata.INDIA
25. **Girigoswami K** and Ghosh R.NADH dehydrogenase subunits are over-expressed in cells exposed repeatedly to H<sub>2</sub>O<sub>2</sub>: National Symposium on Trends in Cellular Biochemistry and Biophysics on the occasion of Golden Jubilee Celebration of University of Kalyani, Organized by Dept. of Biochem. & Biophys., KU.Sept 5-6, 2010. Kalyani, India.
26. **Girigoswami K**, Ku SK, Ryu J and Park CB; Template directed amyloid lawn system for high throughput analysis of amyloid toxicity. UGC Sponsored State Level Seminar on 'Playing God: Expanding Frontiers of Biotechnology.' 2009, 6-7 Nov 2009, held at Gurudas College, Narkeldanga, Kolkata, INDIA.
27. Ku SK, Kanapathipillai M, **Girigoswami K** & Park CB; Mad Cow disease's prion peptide aggregation and neurotoxicity suppressed by extremolytes, The Korean Society for Applied Biological Chemistry (KSABC) Conference 2008, May 2008 Held at KSABC, **South Korea**, pp.127.
28. Rhu J, **Girigoswami K**, Ha C, Ku SK & Park CB; Influence of Multiple Metal ions on  $\beta$ -Amyloid Aggregation and Dissociation on a Solid Surface, 2008 Spring KSBB Meeting and International Symposium, April 2008 Held at **Chonbuk National University, South Korea**, pp.149.
29. Ku SK, Kanapathipillai M, **Girigoswami K** & Park CB; Inhibition of aggregation and neurotoxicity of PrP 106-126 by small stress molecules, 2007 KSBB Fall Meeting and International Symposium, Oct 2007 Held at **Dae-gu, South Korea**, pp.237.

30. Kanapathipillai M, Ku SK, **Girigoswami K** & Park CB; Inhibitory effect of small stress molecules on aggregation and neurotoxicity of Prion peptide 106-126, 2007 Korean Institute of Chemical Engineering (KICChE) Fall Meeting, October **2007**, Held at **KAIST, Daejeon, South Korea**, pp. 163.
31. Ghosh R, **Bose Girigoswami K** & Bhoumik S; Effect of cisplatin on V79 cells conditioned by repeated treatment with low doses of hydrogen peroxide, National Symposium on 21<sup>st</sup> Century in Biochemistry & Biophysics, Feb **2007** Held at **University of Kalyani, W.B.**, India, pp. 30.

### **Workshops/Conferences Organized**

1. Organizer of SERB, DST, Govt. of India Sponsored National Conference on Nanotechnology in Medicine, 8<sup>th</sup> -9<sup>th</sup> September, 2017. Grant Sanction No.SERB/F/2907/2017-18.
2. Organizer of Two day National Workshop in Molecular and Cellular Diagnostics, 10-11 Feb, 2017 at CHRI along with HiMedia.
3. Organizer of Workshop on Nanotechnology for Dental Applications, 11-12<sup>th</sup> April, 2017 at CHRI.

### **Invited Lecture/Resource person**

- Koyeli Girigoswami, Studies on Response of Mammalian Cells after Chronic Exposure to Cytotoxic Agent, organized by Prof. Seong Hun Kim at Seoul National University, SOUTH KOREA on 27.02.2007 (invited lecture).
- Koyeli Girigoswami, Biomedical applications of optical in vivo imaging, at Workshop on 'Clinical Applications of Optical in vivo Imaging' held at Translational Research Platform for Veterinary Biologicals, TANUVAS, Chennai on 24.11.2016 (Resource person).
- Koyeli Girigoswami, Biomedical applications of optical in vivo imaging, at Workshop on 'Clinical Applications of Optical in vivo Imaging' held at Translational Research Platform for Veterinary Biologicals, TANUVAS, Chennai on 14.11.2017 (Resource person)