Safiulla Basha Syed, M.Sc, Ph.D.

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Graduated in Medical Biochemistry with three years of postdoctoral research experience in biochemistry and cancer biology.

Area of Expertise: Biochemistry and Cancer biology with special emphasis on understanding the role of molecular pathways and proteins involved in cancer therapy resistance.

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Professional Experience

2020-till date: **National Postdoctoral Fellow** (NPDF-SERB), Advanced Centre for Treatment Research and Education in Cancer (ACTREC), Tata Memorial Centre, Navi Mumbai, India.

I am working to understand the role of Y-Box binding protein 3 (YBX3) in glioblastoma progression and metastasis. YBX3 is a DNA and RNA binding protein and is reported to regulate gene expression at transcription and post-transcription levels. We found a higher expression of YBX3 in Glioblastoma than in low-grade glioma. Furthermore, the expression of YBX3 was significantly higher in our in-vitro relapse GBM model and patient samples compared to the parent cells and primary patient tumour samples, respectively. Using various molecular biology techniques, such as knockdown/overexpression of YBX3, western blotting, Immunohistochemistry, mRNA decay assay and ChIP-qPCR, we found that YBX3 regulates the cell migration and invasion in GBM by positively regulating the expression of the slug (EMT transcription factor). Further, mice injected orthotopically with YBX3 knockdown GBM cell line showed decreased tumor growth and metastasis compared to the control mice. The manuscript is under preparation.

2019- 2020: **Senior Research Fellow**, Advanced Centre for Treatment Research and Education in Cancer (ACTREC), Tata Memorial Centre, Navi Mumbai, India.

Understanding the role of Dual Specificity Phosphatase 6 (DUSP6) in therapy resistance in Glioblastoma. Using an in-vitro radioresistant GBM relapse cell model and in-vivo orthotopic mouse model we showed that inhibition of DUSP6 results in the radiosensitization of GBM parent and relapse cells. In this study, we showed that DUSP6 expression was significantly higher in recurrent GBM patient biopsies compared to expression levels in primary GBM biopsies. Pharmacological or genetic inhibition of DUSP6 catalytic activity radiosensitized primary and, importantly, relapse GBM cells by inhibiting the recruitment of phosphorylated DNAPKcs (also known as PRKDC), subsequently

downregulating the recruitment of phosphorylated histone H2AX (γH2AX) and 53BP1 (also known as TP53BP1). This resulted in decreased cell survival and prolonged growth arrest upon irradiation in vitro and significantly increased the progression-free survival in orthotopic mouse models of GBM. (**J Cell Sci (2021) 134 (24): jcs259520**)

Education:

2019 **Ph.D. Medical Biochemistry**, Thesis title "Design and Development of Piperine Based P-glycoprotein (P-gp) Inhibitors to Overcome Drug Resistance in Cancer" Pondicherry University, India

2011 **M.Sc. Medical Biochemistry**, Manipal Academy of Higher Education, India (**Score: 65%**)

2008 **B.Sc. Biotechnology**, Sri Venkateswara University, India (**Score: 73.4%**)

Awards/Fellowships received

2018 International Travel Grant to present Ph.D. research work at **International Symposium on the Chemistry of Natural Products, Nov 25-29, 2018, held in Athens, Greece.** Science and Engineering Research Board, India

2018 **Senior Research Fellowship** from University Grant Commission, Govt. of India.

2017 Best poster presentation award in Indian Science Congress Pondicherry University chapter in 2017

2015 Secured **All India Rank 51 in CSIR-UGC Junior Research Fellowship** exam to pursue Ph.D., University Grant Commission, Govt. of India.

2012 Received Junior Research Fellowship from Department of Biotechnology, Pondicherry University, India.

Technical Skills

- Good hands-on experience in cell culture, developing drug-resistant cancer cell lines using chemotherapeutic drugs, Western blotting, Immunoprecipitation, Chromatin-immunoprecipitation, Immunofluorescence, Immunohistochemistry, Flow cytometry, Extraction of RNA and RT-PCR.
- Generation of stable knockdown or expression cell lines.
- Generation of in-vivo Glioblastoma orthotopic mouse models and experience in handling IVIS Spectrum for in vivo imaging.
- *In silico* Ligand based-drug design, homology modelling of protein
- *In silico* drug-protein interaction studies by using software such as AutoDock and Schrodinger.

Publications

[1] Jyothi Nair; **Safiulla Basha Syed**; Tejashree Mahaddalkar; Madhura Ketkar; Rahul Thorat; Jayant Sastri Goda; Shilpee Dutt. DUSP6 regulates radiosensitivity in Glioblastoma by modulating the recruitment of phosphorylated DNAPKcs at DNA double-strand breaks. ***Journal of Cell Science,*** 2021.

[2] **Safiulla Basha Syed**; Shu-Yu Lin; Hemant Arya; I-Hsuan Fu; Teng-Kuang Yeh; Mariasoosai Ramya Chandar Charles; Latha Periyasamy; Hsing-Pang Hsieh; Mohane Selvaraj Coumar. Overcoming vincristine resistance in cancer: Computational design and discovery of piperine-inspired P-glycoprotein inhibitors. ***Chemical Biology & Drug Design,*** *2021.*

[3] Yung-Chieh Chang, Sree Karani Kondapuram, Tsung-Han Yang, Safiulla Basha Syed, Siao Muk Cheng, Tzu-Yu Lin, Yi-Chen Lin, Mohane Selvaraj Coumar, Jang-Yang Chang, Euphemia Leung, Chun Hei Antonio Cheung. The SMAC mimetic LCL161 is a direct ABCB1/MDR1-ATPase activity modulator and BIRC5/Survivin expression down-regulator in cancer cells. **Toxicology and Applied Pharmacology,** 2020.

[4] **S.B. Syed**, H. Arya, I.H. Fu, T.K. Yeh, L. Periyasamy, H.P. Hsieh, M.S. Coumar, Targeting P-glycoprotein: Investigation of piperine analogs for overcoming drug resistance in cancer, ***Sci. Rep***. 7 (2017).

[5] **S.B. Syed**, M.S. Coumar, P-Glycoprotein Mediated Multidrug Resistance Reversal by Phytochemicals: A Review of SAR & Future Perspective for Drug Design., ***Curr. Top. Med. Chem.*** 16 (2016) 2484–508.

[6] S.A. Sufi, L.N. Adigopula, **S.B. Syed**, V. Mukherjee, M.S. Coumar, H.S.P. Rao, R. Rajagopalan, In-silico and in-vitro anti-cancer potential of a curcumin analogue (1E, 6E)-1, 7-di (1H-indol-3-yl) hepta-1, 6-diene-3, 5-dione, ***Biomed. Pharmacother.*** 85 (2017) 389–398.

[7] H. Arya, C. S. Yadav, Shu-Yu Lin, **S.B. Syed**, M.R.C. Charles, S. Kannadasan, H.P. Hsieh, S.S. Singh, P.R. Gajurel, and M.S. Coumar, Design of potent anticancer lead inspired by natural products from traditional Indian medicine, ***J. Biomol. Struct. Dyn***. 2019 **(Accepted)**

[8] H. Arya, **S.B. Syed**, S.S. Singh, D.R. Ampasala, M.S. Coumar, In Silico Investigations of Chemical Constituents of Clerodendrum colebrookianum in the Anti-Hypertensive Drug Targets: ROCK, ACE, and PDE5, Interdiscip. ***Sci. Comput. Life Sci.*** 10 (2018) 792–804.

[9] Gopichand Chinta, **Safiulla B. Syed**, Mohane S. Coumar and Latha Periyasamy, Piperine: A Comprehensive Review of Pre-Clinical and Clinical Investigations, ***Curr. Bioact. Compd.***, 2015: 156-169.

Books Chapters

[1] S. Sarvagalla, **S.B. Syed**, M.S. Coumar, An Overview of Computational Methods, Tools, Servers, and Databases for Drug Repurposing, in Silico Drug Des., 2019: 743–780.

Computer Skills and handling of research software:

- Well-versed with MS Office applications like Word, Excel & PowerPoint.
- Good working knowledge of GraphPad Prism Software.

Other achievements: Qualified for Andhra Pradesh State Eligibility Test (APSET) for Assistant Professorship and Karnataka State Eligibility Test (KSET) for Assistant Professorship.

Personal Details:

Date of Birth : 15/06/1988

Languages are known: English, Hindi, Urdu, Telugu, Kannada and Tamil (Basic)

Countries visited: Visited Greece to attend an Internation conference in 2018.

List of Referees

Referee 1: Dr. S. Mohane Coumar,
Assistant Professor,
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Referee 2: Dr. P. Latha,
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Referee 3: Dr. Shilpee Dutt
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Expected availability date: As soon as possible