Proposal to Organize Summer School 2018

1. Theme of the Summer School : A succinct course on Conceptual and Experimental basics in Biochemistry with a glimpse of disease pathogenesis

2. Name of the Co-ordinator: Dr.ElangovanVellaichamy

Name of the Co- Organising member: Dr.A.J.Vanisree

3. Proposed Dates : May 3rd Week

4. Concept Note :

Existence of life on earth is dependent on the different types of biomolecules without which any organism cannot survive. The in-depth study of such molecules of life is broadly mentioned as Biochemistry, a discipline that explores biochemical and molecular mechanisms of life. Our theme of the theme of summer school is concerned about providing the essentials of biochemistry, an , strictly, experimental science that relies heavily on scientific demonstration and instrumentation. The school would encompass the lectures and workshops on various perspectives of Biochemistry providing a holistic view onthe life process that are regulated and deregulated in health and diseases. Further, the student participants would be enlightened on application oriented concepts in the hot areas of biotechnology, biophysics and Nanotechnology making them more competent.The course would enable the students to align themselves with the deeper appreciation of scientific principles, testing, validity, accuracy and knowledge that can help them to choose and excel in any aspect of biochemical science.

5. Details of Sub-Themes:

(i) Biochemistry:

-Basic concepts and techniques in Biochemistry and Molecular Biology, patholgy of the diseases, therapeutic strategies against the disease pathogenesis.

(ii)Physics- Basic concepts in -Biophysics - Theoretical physics for Biology–and application in diagnossis useful for neurobiology

(iii) Nanotechnology and Biotechnology

Basic applicationmodes of nano and Biotechnology in the diagnosis and management of various pathological conditions .

Days	9-10	11-12	12-1	1-2	2-3	3-4	4-5
1	Inauguration	Lecture			Lecture	Workshop	

6. Time –Table (Types of Sessions –Lecture/: Workshop/Field Visit/Lab Visit etc.)

2	Lecture			Lunch Break	Lecture		Workshop
3	Workshop		Lecture		Workshop	Lecture	Workshop
4	Lecture	Workshop			Lecture		
5	Workshop	Lecture	Workshop		Workshop		
6	Lecture		Workshop		Lecture		Workshop
7	Lecture						
8	Excursion/ filed Trip				Workshop	Excursion/ filed trip	
9	Workshop		Group discussion		Group activity		
10	Group activity	Presentation			Presentation continues	Valedictory	
Days	9-10	11-12	12-1	1-2	2-3	3-4	4-5
1	Inauguration	Lecture		Lunch Break	Lecture	Workshop	
2	Lecture				Lecture		Workshop
3	Workshop		Lecture		Workshop	Lecture	Workshop
4	Lecture	Workshop			Lecture		
5	Workshop	Lecture	Workshop		Workshop		
6	Lecture		Workshop		Lecture		Workshop
7	Lecture						
8	Excursion/ filed Trip				Workshop	Excursion/ filed trip	
9	Workshop		Group discussion		Group activity		CULTURALS
10	Group activity	Presentation			Presentation continues	Valedictory	

7. List of Resource Persons (Tentative) :(i) Dr.H.Devaraj (Former UGC Vice-Chairman, UGC-BSR Fellow, Zoology,UoM,AoS - *Glycobiology*)

(ii) Dr.S.NiranjaliDevaraj (UGC-BSR Fellow, Biochemistry,UoM,AoS* -*Glycobiology*)

(iii) Dr.A.Gopalakrishna (Biotechnology, IIT Madras, AoS* -*Signal Transduction*),

(iv)RamaSVerma(Biotechnology, IIT, AoS -*Stem Cells and Molecular Biology*),

(v) Dr.P.Gautam (CBT, Anna University,AoS -*Chemical Biology & Computational Biology*),

(vi) Dr.Mathivanan (Campus Director, CAS in Botany,UoM,AoS* -*Plant Biotechnology*)

(vii) Dr.Balakumar(Nanotechnology,UoM,AoS-*Nano Materials*)

(viii) Dr Rita John(Theoretical physics, UoM, AoS-*Condensed Matter Physics*)

(ix)Dr.ElangovanVelaichamy (Biochemistry, UoM, AoS* -*Cardiology*)

(x) Dr.Subramanian (Biochemistry, UoM, AoS -*Diabetes*)

(xi) Dr.Sudhandiran (Biochemistry, UoM,AoS -*Cell and Death*)

(xii) Dr. A.J Vanisree (Biochemistry, UoM, AoS -*Neurobiology*)

(xiii) Dr.Srinivasan (Chemistry, CLRI, AoS -*Polymer chemistry*)

(xiv)Dr.B.S.Lakshmi(CBT,AnnaUniversity, AoS -*Biotransformations and Drug Discovery*).

Abbreviations:

UoM- University of Madras; AoS- Area Of Specialization

8. Details of Field Visits **:**Lab visits

Glycobiology laboratories, Peptide Unit, Cell Biology laboratory, Neurobiology unit, Biophysical laboratory, Lab of Herbal technology, Nanotechnology, Biotechnology.

9. Pre-Requisites for the Course **:** Under graduate students with the back ground knowledge in Life sciences.

10. Reading List **:**

(Minimum 10 articles and 2 Books): (i) Articles

1. Venkatesan, B., Tumala, A., Subramanian, V., &Vellaichamy, E. (2016). Data on synthesis and characterization of chitosan nanoparticles for in vivo delivery of siRNA-Npr3: Targeting NPR-C expression in the heart. *Data in brief*, *8*, 441-447.

2. Divya, T., Sureshkumar, A., &Sudhandiran, G. (2017). Autophagy induction by celastrol augments protection against bleomycin-induced experimental pulmonary fibrosis in rats: Role of adaptor protein p62/SQSTM1. *Pulmonary Pharmacology & Therapeutics*.

3.Subramani, R., Narayanasamy, M., &Feussner, K. D. (2017). Plant-derived antimicrobials to fight against multi-drug-resistant human pathogens. *3 Biotech*, *7*(3), 172.

4. Mohan, S., Sivakumar, B., Kulangara, R. V., & Subramanian, B. (2016). Visible Light Driven Photocatalytic Efficiency of rGO□Ag□BiFeO3 Ternary Nanohybrids on the Decontamination of Dye□Polluted Water: An Amalgamation of 1D, 2D and 3D Systems. *ChemistrySelect*, *1*(21), 6961-6971..

5. Subaraja, M., &Vanisree, A. J. (2016). Rotenone causing dysfunctional mitochondria and lysosomes in cerebral ganglions of Lumbricusterrestris degenerate giant fibers and neuromuscular junctions. *Chemosphere*, *152*, 468-480.7.

6.Sudhagar, S., Sathya, S., Gokulapriya, G., & Lakshmi, B. S. (2016). AKT-p53 axis protect cancer cells from autophagic

cell death during nutrition deprivation. *Biochemical and biophysical research communications*, *471*(4), 396-401.

7.. Jaiganesh, C., Devi, V. R., Pillai, S., &Subramanian, S. Synthesis, characterization and evaluation of antidiabetic properties of a new metformin-3-hydroxyflavone complex studied in high fat diet fed-low dose streptozotocin induced experimental type 2 diabetes in wistar rats.

8. Prabhu, V. V., &Devaraj, N. (2017). Regulating RNA Binding Motif 5 Gene Expression− A Novel Therapeutic Target for Lung Cancer. *Journal of Environmental Pathology, Toxicology and Oncology*, *36*(2).

9. Gopal, A., Chidambaram, I. S., Devaraj, N., &Devaraj, H. (2017). Shigelladysenteriae infection activates proinflammatory response through β-catenin/NF-κBsignaling pathway. PloS one, 12(4), e0174943.

10. Rao, M. D., &Pennathur, G. (2017). Green synthesis and characterization of cadmium sulphide nanoparticles from Chlamydomonasreinhardtii and their application as photocatalysts. *Materials Research Bulletin*, *85*, 64-73.

(ii) Books

1. Newsholme, E., & Leech, A. (2011). *Functional Biochemistry in Health and Disease*. John Wiley & Sons.
2. Lundblad, R. L., & Macdonald, F. (Eds.). (2010). *Handbook of Biochemistry and Molecular Biology*.CRC Press.

11. Cultural Component : Classical and fusion in Indian Fine Arts

12. Any other : NIL