

**DEPARTMENT OF BIOTECHNOLOGY**

Ministry of Science & Technology, Govt. of India

**STAR STATUS SCHEME**



**SRI VENKATESWARA COLLEGE**

**(University of Delhi)**

**Benito Juarez Road**

**DhaultaKuan, New Delhi 110021**

[www.svc.ac.in](http://www.svc.ac.in)

## II: Hands-on Training

- I. Every department conducted a minimum of 10 Value added experiments that benefitted about 100 students per department every year for the years 2016-17,17-18-18-19.

List of some of the Value added experiments undertaken in the different departments.

S. No.	Name of the Experiment	Course	Number of beneficiaries	Course component
1	Determination of LD <sub>50</sub> value of antibiotic Ampicillin for E. coli DH5 $\alpha$ bacterial culture.	Biochemistry (Hons.) III Year	38	Antibiotic sensitivity
2.	To study the technique of replica plating for E. coli strain XL1-Blue.	Biochemistry (Hons.) III Year	38	Selection of mutants
3.	To study the technique of Blue-white selection to screen out the recombinants from the non recombinants.	Biochemistry (Hons.) III Year	38	Preparation of competent cells and Transformation
4	To investigate eye color mutations in Drosophila using thin layer chromatography: An approach to understand the underlying mechanism.	Biochemistry (Hons.) III Year	38	Studying the Eye mutants in Drosophila
5	Demonstration of sodium dependent histidine transport across the intestinal brush border.	Biochemistry (Hons.) II Year	29	Membrane Permeability
6	To study the different phases of growth of E. coli DH5 $\alpha$ strain and to plot a standard bacterial growth curve. Also to calculate the generation time of E. coli DH5 $\alpha$ .	Biochemistry (Hons.) II Year	29	Culture and maintenance of bacterial culture
7	To study the effect of pH of the solvent on the molar extinction	Biochemistry (Hons.) I Year	35	Determination of $\lambda_{\text{max}}$ and $\epsilon$ of chromophore.

	coefficient of para-nitrophenol (PNP).			
8	To study the effect of different buffers like Tris, phosphate and acetate on Lowry's method of protein estimation	Biochemistry (Hons.) I Year	35	Protein estimation by Lowry's method
9	To study the effect of abiotic stresses on germination of seeds of some major food crops of India.	Botany (Hons.) III Year	32	Stress Physiology is a part of the syllabus and there were no practical in the syllabus related to the topic.
10	To study the effect of Abscissic Acid on Leaf senescence.	Botany (Hons.) III Year	32	Plant Growth regulators are a part of the syllabus and they just had this exercise as a Set-up experiment
11	To calculate the rate of respiration in various parts of plants.	Botany (Hons.) III Year	32	Calculation of rate of respiration in '2 different parts of a single plant'
12	Analysis of physio-chemical properties of soil and water from different sources/regions around Delhi/NCR.	Botany (Hons.) II Year	36	Analysis of physio-chemical properties of soil and water
13	Understanding corrosion and its sacrificial prevention.	Chemistry (H), II year	70	Theory paper of Electrochemistry
14	Conductometric titration of $H_3PO_4$	Chemistry(H), III year	70	Conductometric titration of HCl Vs NaOH
15	Determination of inhibitory effect of $CuSO_4$ on activity of salivary amylase.	Chemistry (H) III	70	Determination of activity of salivary amylase Effect of temperature and pH on activity of salivary amylase

16	Determination of enthalpy of dilution of a given salt by thermochemical method	Chemistry (H), I year	70	Determination of integral enthalpy of solution for a given salt.
17	Conductometric study of acid base titration in non aqueous medium.	Chemistry (H) III	60	Conductometric acid-base titration in aqueous medium
18	Demonstration of the Spectrophotometric Complementary Color Wheel by determining Crystal Field Splitting Energies of synthesized complexes using spectrophotometer.	Chemistry (H) II	70	Preparation of metal complexes
19	To carryout market survey of potent pesticides with details as follows: (a) Name of Pesticides (b) Chemical name and structure of pesticides, (c) Chemical class of pesticides (d) Type of formulation available, (e) Manufacturer's name (f) Useful information on label of packaging regarding, (i) Toxicity (ii) LD 50 ("Lethal Dose, 50%") (iii) Side effects (iv) Antidotes	Chemistry (H) III	40	Preparation of pesticides
20	Qualitative analysis of different toothpaste samples.	Life Science II	35	Semi-micro qualitative analysis of mixtures.
21	Estimation of TSH and T4 levels in the serum sample	Biotechnology	15	ELISA technique
22	To estimate the estrogen levels in the serum samples by competitive ELISA.	Biotechnology	15	ELISA technique
23	Preparation of permanent slides of various organs using microtome technique	Zoology (H), Sem III and IV	40	Examination of sections of mammalian esophagus, stomach, duodenum, ileum, rectum liver,

				trachea, lung, kidney
24	Demonstration of metaphase plate in onion root tip cells using colchicines	Zoology (H), Sem II	20	Demonstration of Mitosis in onion root tip cells
25	Window preparation of chick egg to demonstrate embryonic developmental stages	Biological Sciences (H), Sem IV	35	Study of chick development from live eggs (window viewing)
26	Drosophilla culture to see 15 different pupal stages	Biological Sciences (H), Sem V	35	Study of videos showing selective embryonic events like cleavage; gastrulation
27	Survey of college youth regarding their awareness of reproductive health and availability & use of contraceptives.	Zoology(H), Sem VI	15	Study of Reproductive health & human welfare
28	Comparative study of body mass index versus irregularities in menstrual pattern	Zoology(H), Sem VI	15	Study of Reproductive health & human welfare
29	Mother to daughter differences in the age of menarche, based on changes in food habits, stress levels and lifestyle changes	Zoology(H), Sem VI	15	Visit to centers of proficiency in reproductive physiology
30	Market survey conducted in student's locality regarding the types of Contraceptives stocked, a comparison made area wise based on the type of gentry residing in the different zones of Delhi	Zoology(H), Sem VI	15	Study of modern contraceptive devices.
31	Public perception of demand and choice of contraceptives purchased-information sourced by querying the pharmacist	Zoology(H), Sem VI	15	Study of modern contraceptive devices.

32	Comparative study of costs of different brands of the same contraceptive-eg. Oral pills, Condoms etc.	Zoology(H), Sem VI	15	Study of modern contraceptive devices.
33	Study of different stages of mitosis from root tip of germinated grains (wheat, gram, moon dal)	B.Sc (H) Biological Sciences, Sem IV	45	Demonstration of mitosis from onion root tip
34	To determine wavelength of Na light using Michelson Interferometer	B.Sc (H) Physics, Sem IV		
35	To determine coupling coefficient of piezoelectric crystal	B.Sc (H) Physics, Sem IV		
36	To determine dielectric constant of dielectric material with frequency	B.Sc (H) Physics, Sem IV		
37	Teaching chick embryology through chicken eggs.	B.Sc (H) Zoology&Biosciences, Sem IV		Embryology
38	Study of morphology from dead insects	B.Sc (H) Zoology, Sem II		Invertebrate morphology.
39	Estimation of dust particles on foliage of plants growing on roadside	of B.Sc. (H) Botany	12	Ecology and environment
40	Calculation of percent pollen germination in herbaceous plants of campus (Callistemom sp., Vincarosea, Calendulasp.)	B.Sc. (P) Life Sciences	30	
41	To study the effect of Abscissic Acid on Leaf senescence	BSc(H)Botany	30	
42	To estimate the RQ (Respiratory Quotient) of different plant parts	B.Sc. (P) Life Sciences	30	
43	Determination of inhibitory effect of CuSO <sub>4</sub> on activity of salivary amylase	<u>B.Sc. (H) Chemistry, VI sem</u>	240	

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44	Conductometric study of acid base titration in non aqueous medium.	<u>B.Sc. (H) Chemistry, V sem</u>	240	
45	Estimation of Ba <sup>2+</sup> ions conductometrically.	<u>B.Sc. (H) Chemistry, V sem</u>	240	
46	Quantitative and qualitative analysis of toothpastes.	<u>B.Sc. (H) Chemistry, III sem,</u> <u>B.Sc. Life Science III sem</u>	240	
47	Qualitative analysis of adulterants in selected spices.	<u>B.Sc. (H) Chemistry, I sem</u>	240	
48	Construction of a three component phase diagram	<u>B.Sc. (H) Chemistry, III sem</u>	40	
49	Determination of CMC of the detergents by conductivity method.	<u>B.Sc. (H) Chemistry, IV sem</u>	40	
50	Demonstration of the Spectrophotometric Complementary Color Wheel by determining Crystal Field Splitting Energies of synthesized complexes. Colorimetric studies of Kinetics of Bromination of acetone.	<u>B.Sc. (H) Chemistry, III sem</u>	70	
51	Estimation of Copper in fruit juice samples using Iodometric titration	<u>B.Sc. Life Science IV sem</u>	70	
52	To understand the concept of a complementation test using 2	BSc (H)Biochemistry VI Semester	35	Genetics.

	drosophila mutant ; white eye and apricot eye.			
53	Extraction of genomic DNA from plant tissue	BSc (H)BioSciences IVSemester	30	RDT
54	Effect of temperature and organic solvents on cell membrane permeability using beetroot	BSc (H)BiochemistryIII Semester	30	Membrane permeability
55	To study and visualize the effect of hypotonic and hypertonic solutions on the plant cells	BSc (H)Biochemistry I Semester	35	Cell biology/microscopy
56	Effect of temperature on the pH of the buffer	BSc (H)Biochemistry I Semester	35	Biochemical techniques
57	To study the different phases of growth of E. coli DH5a strain and to plot a standard bacterial growth curve. Also to calculate the generation time of E. coli DH5a	BSc (H)Biochemistry IV Semester	33	Bacterial growth curve
58	To demonstrate the effect of using acid vs alkaline phenol in RNA/DNA extraction from Spinach leaves	BSc (H)Biochemistry VI Semester	35	Genomic DNA isolation
59	Demonstration of haemagglutination test to identify antibody titre to a soluble antigen (BSA)	BSc (H)Biochemistry VI Semester	33	Active agglutination



60	Identification of Photosynthetic pigments on TLC based on their Absorption spectrum	B. Sc. (H) Biochemistry (Sem-3)	33	Membrane Biology and Bioenergetics
61	Estimation of Albumin/ Globulin Ratio (A/G) in serum samples to understand the Liver function (LFT)	B. Sc. (H) Biochemistry (Sem-4)	33	Human Physiology
62	Detection of LDH isoenzymes in serum samples	P.G.Diploma in Molecular & Biochemical Technology	18	Biochemical Techniques
63	To study and visualize the effect of hypertonic and hypotonic solutions on plant cells	B. Sc (H) Biochemistry	35	Visualization of a plant cell
64	To perform viability assessment using trypan blue dye exclusion test	B. Sc (H) Biological Sciences	30	Isolation of spleen cells
65	To Study the effect of Temperature on Enzyme activity	B. Sc (H) Biochemistry	29	Enzymes
66	To observe study reproductive biology of some economically important plants growin in the college campus	B.Sc. (Hons) Botany, Sem VI	30	CC-Reproductive Biology of Angiosprems
67	To compare rates of respiration in different parts of different plants of the college campus	B.Sc (P) Life Sciences	30	
68	Calculation of RQ using different substrates	B.Sc (P) Life Sciences	30	
69	Calculation of Stomatal Index and Frequency from xerophytic and mesophytic leaves found in college campus	B.Sc (P) Life Sciences	30	
70	The ionization potential of mercury	B. Sc. (H) Physics – 2 <sup>nd</sup> year	1/3	Elements of Modern Physics
71	Planck constant using LED's	B. Sc. (H) Physics – 2 <sup>nd</sup> year	2/3	Elements of Modern Physics

72	e/m Magnetic Focusing	B. Sc. (H) Physics – 2 <sup>nd</sup> year	2/3	Elements of Modern Physics
73	Reflection and refraction of microwaves	B. Sc. (H) Physics – 3 <sup>rd</sup> year	1/3	EMT
74	Refractive index of (i) glass (ii) a liquid by total internal reflection using a Gaussian eye piece.	B. Sc. (H) Physics – 3 <sup>rd</sup> year	1/3	EMT
75	Copper oxide nanoparticles synthesis	B. Sc. (H) Physics – 3 <sup>rd</sup> year	1/3	Nanomaterials and Applications
76	I-V characteristics of p-n junction	B. Sc. (H) Physics – 3 <sup>rd</sup> year	1/3	Nanomaterials and Applications
77	Tin-Selenide (Sn-Se) semiconductor nanoparticle synthesis	B. Sc. (H) Physics – 3 <sup>rd</sup> year	1/3	Nanomaterials and Applications
78	Estimation of Copper in fruit juice samples using Iodometric titration.	B.Sc.(H) Chemistry II year	68	Iodometric titrations
79	Qualitative analysis of adulterants in several spices.	B.Sc.(H) Chemistry, III year	64	Qualitative analysis
80	To study the effect of electron withdrawing and donating groups on the UV-Visible spectra of organic compounds.	B.Sc.(H) Chemistry, IV Semester	30	UV sepctroscopy
81	To study the conductometric titrations for bi and tri basic acids and mixture of two strong acids	B.Sc.(H) Chemistry, IV Semester	40	Conductance
82	To determine the CMC of surfactant using conductometric titrations.	B.Sc.(H) Chemistry, IV Semester	40	Conductance
83	As a part of Animal Behaviour practical, students are asked to prepare their own data to record circadian rhythm (sleep, wake up pattern, temperature, BP).	B.Sc. (H.) Zoology	20	Chronobiology

84	Study of morphology from dead insects.	GE- Zoology	29	Insect, vector and diseases
85	Water from lakes is taken to study dissolved O <sub>2</sub> content as an extension of laboratory exercise.	B.Sc. (H.) Zoology	41	Perspective of Ecology
86	Comparison of soil fauna from different places using Berlese funnel	B.Sc. (H.) Zoology	35	Perspective of Ecology
87	What is balanced diet? Record your dietary intake for one day.	B.Sc (H.) Zoology, B.Sc. (H.) Botany, B.Sc. (H.) Biological Sciences	35	GE food nutrition health
88	Conducting survey in Research Methodology.	B.Sc. (H.) Zoology	35	Research Methodology
89	Teaching chick embryology through chicken eggs.	B.Sc (H.) Zoology	20	
90	Teaching bioinformatics tools BLAST, MSA etc for evolutionary biology.	B.Sc (H.) Zoology	20	Evolutionary Biology
91	Understanding fossil formation by using plaster of paris for making cast and molds.	B.Sc. Life Science	104	Genetics and evolutionary biology
92	Transmembrane protein prediction	B.Sc ( Hons) Biochemistry	30	Bioinformatics
93	To assess Oxidative stress in biological samples using AOPP/ Chloramine T assay.	B. Sc. (H) Biochemistry (Sem-6)	33	To assess Oxidative stress in biological samples using TBARS assay
94	To understand the concept of a complementation test using 2 drosophila mutant ; white eye and apricot eye	B. Sc. (H) Biochemistry (Sem-6)	33	To perform simple Monohybrid crosses using Drosophila as a model organism

**II. List of students Open ended experiments/projects done under Star status Grant (Departments listed):**

<b>S. No</b>	<b>Name of the Project</b>	<b>No. of students involved</b>	<b>Beneficiary Department/s</b>	<b>Principal Investigator</b>	<b>Status</b>
1.	Structural Characterization and protein conformational studies of osmolytes on trypsin from bovine, porcine and carps.	23	Biochemistry	Dr. N. Latha Dr. Kameshwar Sharma	Completed
2.	Tissue culture and regeneration of <i>Nicotiana tobaccum</i> using leaf explants.	10	Biotechnology	Dr. Shalini Sen Dr. Nimisha Sinha	Completed
3.	To determine the order of relative polarity of different amino acids using thin layer chromatography.	30	Biochemistry	Dr. Meenakshi Kuhar	Completed
4.	To study the interaction of NPM and HBx proteins using <i>In vitro</i> binding assay for Protein-Protein Interactions (PPIs).	10	Biotechnology	Dr. Anju Kaicker	Completed
5.	Over-expression of the recombinant protein and its purification using Ni-NTA based affinity chromatography	30	Biochemistry	Dr. Vandana Malhotra	Completed
6.	Assessment of anti-diabetic properties of Karela juice, <i>Vincarosea</i> leaves and Metformin tablets.	05	Biochemistry	Dr. Nandita Narayanasamy	Completed
7.	Computational Approaches to characterize drug targets implicated in neurological disorders.	09	Biochemistry, Life Science and Biological Science	Dr. N. Latha	Completed
8.	Studying the effect of synthetic compounds on the cell viability of SCC-4 cell lines using the MTT assay.	10	Biochemistry and Chemistry	Dr. Nimisha Sinha	Completed

S. No	Name of the Project	No. of students involved	Beneficiary Department/s	Principal Investigator	Status
9.	PCR amplification and Cloning of the <i>pknB</i> gene of <i>Mycobacterium tuberculosis</i> into pGEMT easy vector using TA cloning method.	07	Biochemistry and Biological Sciences	Dr. Vandana Malhotra	Completed
10.	Are the rights of labor being honored or violated? An exploration through Pulmonary Fitness Test of construction workers in Delhi NCR.	10	Biochemistry and Economics	Dr. Nandita Naryanasamy, Mr. Krishna Kumar and Dr. Shailja Thakur	Completed
11.	Preparation of e-flora of annual herbs and trees of Sri Venkateswara College.	25 05	Botany Biological Sciences	Dr. Pooja Gokhale Sinha and Dr. Shukla Saluja	Completed
12	Calculation of individual carbon footprint of students and staff of Sri Venkateswara College.	15 10 06 03	Botany, Life Sciences, Statistics Zoology	Dr. Pooja Gokhale Sinha and Dr. Aarati Saxena	Ongoing
13	Effect of water soluble carbon nanotubes on germination of seeds - A Comprehensive Study.	15	Botany, Biological Sciences	Dr. Aditi Kothari-Chhajer, Dr. Neeti Mehla and Dr. Kalyani Krishna	Ongoing
14	Comparative analysis of the anti-oxidant activity of extracts from various plants.	10	Biological Sciences	Dr. Aditi Kothari Chhajer	Completed
15	Determination of caffeine content of famous tea brands found in the Delhi region	10	Chemistry	Dr. Sharda Pasricha, Dr. Shefali Shukla and Dr. Pragya Gahlot	Completed
16	Synthesis, purification and characterization of Coumarin derivatives using Chromatography techniques.	10	Chemistry	Dr. R. P. Singh and Dr. Pooja	Completed
17	Bio-statistical Analysis: Applications in	02 03	Biochemistry Biological	Dr. Robin Suyesh	Completed

S. No.	Name of the Project	No. of students involved	Beneficiary Department/s	Principal Investigator	Status
	Behavioral Studies on amphibians.	05	Science Botany		
18	Introducing students to Field Biology: Understanding Ecology and Behavior of unexplored High altitude Mountain dwelling amphibians.	15	Zoology	Dr. Robin Suyesh and Dr Rajendra Phartyal	Completed
19.	<i>In Vitro</i> antioxidant activity study on local tea samples available in Delhi region.	25	Chemistry	Dr. Sharda Pasricha, Dr. Shefali Shukla	Completed
20.	Analysis of Physico-chemical parameters to evaluate the drinking water quality in Delhi region	25	Chemistry and Biological Sciences	Dr. Pragya Gahlot and Dr. Deepti Sharma	Completed
21	Phytochemicals mediated synthesis of mosquitocidal silver nanoparticles (AgNPs).	10	Chemistry, Botany	Dr. Sanjay Kumar and Dr. Vinita Kapoor	Completed
22	Analysis of CpG islands of Arboviruses.	5	Zoology	Dr. Mansi Verma, Dr. P. S. Dhanaraj	Completed
23	Phylogenomics of dengue to understand their evolutionary patterns.	5	Zoology	Dr. Mansi Verma, Dr. P. S. Dhanaraj	Completed
24	B-cell epitope prediction of Arboviruses.	10	Zoology	Dr. Mansi Verma, Dr. P. S. Dhanaraj	Completed
25	Isolation of cell free DNA from plasma and PCR confirmation for ALU fragments	6	Zoology	Dr. P. Jayaraj	Completed
26	Use of online bioinformatics tool (MutP53 Software) to validate P53 gene mutation in PCR Products	6	Zoology	Dr. P. Jayaraj	Completed
27	<i>Agrobacterium</i> mediated genetic transformation in Rice	M.Sc. Dissertation	Banasthali Vidh yapeeth, Rajasthan	Dr. Neeti Mehla	Completed

S. No	Name of the Project	No. of students involved	Beneficiary Department/s	Principal Investigator	Status
28	Molecular characterization of endo-symbionts in insect pests	M.Sc. Dissertation	BanasthaliVidh yapeeth, Rajasthan	Dr. Amit Vashishtha	Completed
29	To study the effect of heating on nutritional values of Sunflower oil	05	Biochemistry	Dr. Nandita Narayanasamy	Completed
30	To study the changes in secondary metabolites due to Vesicular-arbuscular mycorrhiza (VAM)-root association in soybean	02	Zoology	Dr.Vartika Mathur	Completed
31	Understanding Vocal Behaviour Of Unexplored High Altitude Mountain Dwelling Cicadas	09	Zoology	Dr. Rajendra Phartyal And Dr. Robin Suyesh	Completed
32	Conduct tissue culture of <i>Eclipta alba</i> a medicinally important plants ❖	07	Botany	Dr.NetiMehla	Completed
33	To study the effect of abiotic stress (drought, temperature and salinity) on seed germination	10	Botany	Dr. Aditi Chajjar	Completed
34	To study the rate of respiration of commonly growing plants	30	Botany	Dr. Pooja Ghokle	Completed.
35	In Vitro antioxidant activity study on local tea samples available in Delhi region.	25	Chemistry	Dr. Sharda Pasricha Dr. Shefali Shukla	Completed
36	Analysis of Physico-chemical parameters to evaluate the drinking water quality in Delhi region	25	Chemistry Biological Sciences	Dr. Pragya Ghelot Dr. Deepti Sharma	Completed
37	Phytochemicals mediated synthesis of	10	Chemistry and Botany	Dr. Sanjay Kumar	Completed

S. No .	Name of the Project	No. of students involved	Beneficiary Department/s	Principal Investigator	Status
	mosquitocidal silver nanoparticles (AgNPs			Dr Vineet Kapoor	
38	Comparing bromination methods for acetanilide using green chemistry matrices	5	Chemistry	Dr. Sharda Pasricha and Dr. Rekha Yadav	Completed
39	To assess Oxidative stress in biological samples using AOPP/ Chloramine T assay.	30	Biochemistry	Dr. Nandita Narayanasamy Dr Meeta Bharadwaj	Completed
40	To verify Hardy Weinberg equilibrium in a population for a co-dominant trait, e.g. ABO blood group and for an X- linked trait, e.g. Colorblindness.	30	Biochemistry	Dr. Nandita Narayanasamy	Completed
41	To estimate the estrogen levels in the serum samples by competitive ELISA	15	PGD in Biotechnology	Dr. Anju Kaicker	Completed
42	Characterization of abundant serum proteins and their isoforms using various biochemical techniques.	15	PGD Biotechnology	Dr. Kameswar Sharma and Dr. Ravi Varma Pollisetty	completed
43	To study the cardiovascular fitness of college students based on their anthropometric profile and exercising status	10	Biochemistry, Biological science, Life Science	Dr Sarika Yadav Dr Nitika Kaushal	Completed
44	Culturing and studying Dictyostelium discoides as a model organism	10	Biochemistry, Biological science, Life Science	Dr Nandita Narayansamy Dr Nimisha Sinha	Completed
45	Calculation of individual carbon footprint of students of Sri Venkateswara College	30	Botany Electronics Statistics	Dr. Pooja Gokhale Sinha	Completed



<b>S. No</b>	<b>Name of the Project</b>	<b>No. of students involved</b>	<b>Beneficiary Department/s</b>	<b>Principal Investigator</b>	<b>Status</b>
46	Detection of radio transient events in real time using GMRT	Ishita Chaturvedi	Physics	Dr. Yashwant Gupta	Completed
47	Study of Solar Activity cycle in the Solar Atmosphere	Pranav Singhal	Physics	Dr. Brijesh Kumar	Completed
48	Projectile and proposing a design for its launch	Sanchi Virmani	Physics	Mr. Aswini Kumar Mr. M. K. Kalra	Completed
49	Think Robot (Internship)	Ishita Chaturvedi	Physics	-	Completed
50	A Cost-Effective and Efficient egg windowing method to teach early embryonic development in chick ( <i>Gallus gallusdomesticus</i> ) to under-graduate students	60	B.Sc. (H.) Zoology & B.Sc. (H.) Biological Sciences	Dr. P. Jayaraj	Completed
51	To study the changes in secondary metabolites due to Vesicular-arbuscular mycorrhiza (VAM)-root association in soybean	2	B.Sc. (H.) Zoology	Dr. Vartika Mathur	Completed
53	Introducing students to field biology: Understanding ecology and behaviour of unexplored high altitude mountain dwelling amphibians	9	B.Sc. (H.) Zoology; B.Sc. (H.) Biological Sciences; B.Sc. Life Sciences; B.Sc. (H.) Zoology	Dr. P S Dhanaraj, Dr.RajendraPhartyal, Dr. Robin Suyesh	Completed
54	Hydrogen bonding of HOPO with floromethanes	5	Chemistry	Mr. H. C. Tandon	Completed and paper communicated

<b>S. No</b>	<b>Name of the Project</b>	<b>No. of students involved</b>	<b>Beneficiary Department/s</b>	<b>Principal Investigator</b>	<b>Status</b>
55	Investigate novel drug targets in Nipah Virus	4	Biochemistry	Dr. N. Latha	Completed
56	Development of a National Allergen Database	5	Biochemistry, Biological Sciences & Physics	Dr. N. Latha	Completed
57	To assess the sleep hygiene in students	10	BSc (H) Biochemistry	Dr. Nandita Narayanasamy	Completed

### **In-house Summer training**

<b>S. no.</b>	<b>Name of the student</b>	<b>Course</b>	<b>Duration</b>	<b>Teacher/Department</b>
1.	Rahul Tomar	B.Sc. Zoology, SriVenkateswara College	2015	Dr. Vartika Mathur, Department of Zoology
2	Ms. Shivani Rawat	B.Sc (H) Zoology, Sri Venkateswara College	2016	Dr. Vartika Mathur, Department of Zoology
3.	Ms. Yukti	B.Sc (H) Zoology, Sri Venkateswara College	2016	Dr. Vartika Mathur, Department of Zoology
4.	Ms. Tandrili Barua, Aarti Kasbah, Ankita, Harshdeep Kaur	M.Sc., Jamia Milia islamia University, B.Sc. Biological science, Sri Venkateswara College	2016	Dr. Vartika Mathur, Department of Zoology
5.	KomalChapprana	M.Sc., Jamia Milia islamia University	2016	Dr. Vartika Mathur, Department of Zoology
6.	Bineet Kaur, Jyoti Sharma, Priyanka Rathore	B.Sc (H) Botany, Sri Venkateswara College	2016	Dr. Neeti Mehla, Department of Botany
7.	Ayushi Shukla, Chesta Jain	B.Sc (H) Botany, Sri Venkateswara College	2016	Dr. Amit Vashishtha, Department of Botany
8.	Kriti Negi, Shivansh	B.Sc (H) Botany, Sri Venkateswara College	2016	Dr. Amit Vashishtha, Department of Botany

<b>9</b>	Ishani Mukherjee, AmbujKashyap,	Botany	2018	Tissue Culture Facility, Sri Venkateswara College
<b>10</b>	Tanya Rattanpal	Botany	2019	Tissue Culture Facility, Sri Venkateswara College
<b>11</b>	Pallawi Choubey, Aman Narula, Pralamagna Mallick	Life Sciences	2018	Tissue Culture Facility, Sri Venkateswara College
<b>12</b>	Najdeep Kaur	Physics	2018-19	Sri Venkateswara College
<b>13</b>	Ishita Chaturvedi	Physics	2018-19	Sri Venkateswara College
<b>14</b>	Shriya Agarwal	Physics	2018-19	Sri Venkateswara College
<b>15</b>	Sejal Chandana	Physics	2018-19	Sri Venkateswara College
<b>16</b>	Varun Kumar, Sameeksha Jain, Harsh Bhakhri, Vaishali Lakra, Prarthna Luthra, Aditya Kumar, Bharti, Kanika, Drishan Dahal	Biochemistry	2018	Dr N.Latha, Bioinformatics Infrastructure Facility (BIF) , SVC
<b>17</b>	Vaishali Goyal, Asta Purwar, Naintara Jain, Sucharita Sen, Harsh Bhakri	Biochemistry	2018	Dr. Vandana Malhotra
<b>18</b>	Sahil Kumar, Bharti	Biochemistry	2018	Dr Nandita Narayanasamy
<b>19</b>	Manasa Manoj worked on a Design of Peptide Based Inhibitors as Antimalarial Therapeutics	Bharath Institute of Higher Education and Research, Chennai, Tamilnadu	2018	Dr N.Latha, Bioinformatics Infrastructure Facility (BIF) , SVC

## V. Summer Trainings outside the College

S. no.	Name of the student	Year	Department	Institute
1	Ankit Dulat	2016	Physics	IIT Kanpur
2	Shaoni Kar	2016	Physics	Delhi University
3	Mehul Joshi	2016	Physics	Punjab University
4	SampannaPahi	2016	Physics	IMMT, Bhubaneswara
5	Madhavi Nerella and Atul Agrawal	2016	Botany	Centre for Science Education and Communication
6	Diksha Batra	2016	Botany	Department of Microbiology, Indian Agricultural Research Institute, New Delhi
7	Arushi Garg	2016	Biochemistry	Tablets India Limited, Chennai
8	Lakshay Malhotra	2016	Biochemistry	NII, New Delhi
9	Lakshay Malhotra	2016	Biochemistry	Department of Chemistry, North Campus, University of Delhi
10	Mohd. Areeb	2016	Biochemistry	Department of Genetics, South Campus, University of Delhi
11	Ifrah Perveen	2016	Biochemistry	Sigma test and Research Centre, New Delhi
12	Shristi Rangrajan	2016	Biochemistry	SLS, JNU, New Delhi
13	Gaurav Mehta	2016	Biochemistry	BARC, Mumbai
14	Tanya Sharma	2016	Botany	Department of Genetics, UDSC
15	Ambuj Kashyap	May-July 2017	Botany	IISc., Bangalore
16	Bhoomika Manchanda	May-June 2017	Biochemistry	CDFD, Hyderabad
17	Abhinav Pokhriyal	May-June 2017	Biochemistry	LVPEI, Hyderabad
18	Dikshita Arora	2017	Botany	NEERI, Nagpur

<b>19</b>	Shreya Wadhava	2017	Botany	WWF, EDUCare Swach Village
<b>20</b>	Yash Kumar	2017	Botany	Unicare Pharmaceutical, max Hospital
<b>21</b>	Ishani Mukherjee	2017	Botany	Supreme Court, CAT court
<b>22</b>	Madhavi Narella	2017	Botany	Start up
<b>23</b>	Israt Jahan	2018	Botany	Institute of Life sciences, Bhuwaneshwar
<b>24</b>	Tushadri Singh	2018	Botany	NIPGR, New Delhi
<b>25</b>	Shriya Sharma	2018	Botany	JNU, New Delhi
<b>26</b>	Richa Verma	2018	Botany	JNU, New Delhi
<b>27</b>	Kanika Chawla	2018	Botany	NII, New Delhi
<b>28</b>	Ritik Sinha	2018	Botany	NCBS, Bangalore
<b>29</b>	Aishwarya Mahajan	2018	Botany	National Centre for Biotechnology, Faridabad
<b>30</b>	Ishita Chaturvedi	2018	Physics	NCRA, Pune
<b>31</b>	Pranav Singhal	2018	Physics	USO, Udaipur
<b>32</b>	Dipankar Das	2018	Physics	Guwahati University
<b>33</b>	Mrunmouy	2018	Physics	IIT Guwahati
<b>34</b>	Varun Kumar	2018	Biochemistry	SCIS, JNU, Delhi
<b>35</b>	Mayank Saini	2018	Biochemistry	Uflex limited Noida
<b>36</b>	Sameeksha Jain	2018	Biochemistry	ACBR, North Campus

<b>37</b>	Harsh Bhakhri	2018	Biochemistry	SCIS, JNU, Delhi
<b>38</b>	Vaishali Lakra	2018	Biochemistry	SCIS, JNU, Delhi
<b>39</b>	Nandika Bhat	2018	Biochemistry	Cancer pharmacology division, CSIR- IIM Jammu
<b>40</b>	Aditya Kumar	2018	Biochemistry	Awign Doctalk , Delhi
<b>41</b>	Aditya Kumar	2018	Biochemistry	SCIS , JNU , Delhi
<b>42</b>	Avika Chopra	2018	Biochemistry	UFLEX LTD, Noida
<b>43</b>	Sahil Kumar	2018	Biochemistry	SCIS, JNU, Delhi
<b>44</b>	Priyanka Saini	2018	Biochemistry	Sun pharmaceutical, gurugram
<b>45</b>	Avika Chopra	2018	Biochemistry	Department of Biochemistry, AIIMS, New Delhi
<b>46</b>	Naintara Jain	2018	Biochemistry	Drosophila Research Lab, IISER Mohali
<b>47</b>	Sucharita Sen	2018	Biochemistry	Department of Biochemistry, South Campus, Delhi University
<b>48</b>	Kanika	2018	Biochemistry	SCIS, JNU , New Delhi
<b>49</b>	Nikita Yadav	2018	Biochemistry	UFLEX LTD., Noida
<b>50</b>	Pranjal Yadav	2018	Biochemistry	UFLEX LTD., Noida
<b>51</b>	Vaishali Goyal	2018	Biochemistry	Molecular Biology Laboratory, School of Life Sciences, JNU
<b>52</b>	Astha Purwar	2018	Biochemistry	National Institute of Immunology, New Delhi

## VI. Student Publications

- 1. Effects of Heating and Storage on Nutritional value of Sunflower Oil.** T.C.A. Avni, S. Anupriya, Priyanka Rai, Kiran Maan, Charu Chauha, Nandita Naryansamy, Department of Biochemistry, Sri Venkateswara College. *DU Journal of Undergraduate Research and Innovation Volume 2, Issue 1 pp 196-202, 2016 ISSN 2395-2334.*
- 2. Exploring bacterial diversity from contaminated soil samples from river Yamuna.** Dubey, M., Yadav. G., Kapuria, A., Muralidharan, M.S., Lal, D., Lal, R., Dhanaraj, P.S., and Verma, M. 2014. *Microbiol. 83: 585-588. ISSN: 0026-2617.*
- 3. Comparative Analysis of Antioxidant Activity in Various Plant Species.** Kothari-Chhajer A, Samad A, Reema, Vasu K, Karan J, Aditi, Dhiman C and Ray N (2016). Comparative Analysis of Antioxidant Activity in Various Plant Species. *DU Journal of Undergraduate Research and Innovation 2(1), 7-12 (ISSN 2395-2334).*
- 4. Highly conserved epitopes of DENV structural and non-structural proteins: Candidates for universal vaccine targets.** Verma, M., Bhatnagar, S., Kumari, K., Mittal, N., Sukhralia, S., Gopirajan AT, S., Dhanaraj, P.S., Lal, R. 2019. *Gene, 695: 18-25.*
- 5. From dengue to Zika: the wide spread of mosquito-borne arboviruses.** Sukhralia, S., Verma, M., Gopirajan, S. et al. 2018. *Eur. J. Clin. Microbiol. Infect. Dis.* <https://doi.org/10.1007/s10096-018-3375-7>
- 6. Silence Amidst The Pandemonium! Anthropogenic Activities Threaten The Survival Of Amphibians In Western Himalayas.** Oral presentation at International Conference Climate Change, Biodiversity And Sustainable Agriculture (Iccbsa-2018) Dec 13th - 16th, 2018 Assam Agricultural University, Jorhat.
- 7. Poster presentation at 1<sup>st</sup> International Conference on Integrative Chemistry, Biology and Translational Medicine** organized by Centre of Global Health, Hansraj College and Loyola University Chicago Stritch School of Medicine, USA on 25-26 February, 2019.
- 8. Poster presentation “Analysis of human TERT expression in squamous cell carcinoma of the skin: its implication in tumor metastasis and differentiation.”** Stuti Kumari, Twinkle Kathuria, Jassica Gupta, Ruchi Dubey, Seema Sen, Perumal Jayaraj Science Festival held during March 11-12, 2019 in DeenDayalUpadhyaya College, University of Delhi (**Won Best Prize**)
- 9. Poster presentation: “Telomerase reverse transcriptase expression in Eyelid Sebaceous Gland Carcinoma : implications for tumor progression.”** Ajita Mishra, Shriya Bhattacharya, Pranjal, Manpreet Kaur, Seema Sen , Perumal Jayaraj Science Festival held during March 11-12, 2019 in DeenDayalUpadhyaya College, University of Delhi

10. Presented a poster entitled **“In silico approach to design potential small molecule inhibitors for CD4-gp120 interaction targeting the HIV early infection stage”** at the ICBTM-2019 organized by Hansraj College in association with Loyola University, USA
11. Poster entitled **“Biological Networks in the study of Neurological Disorders”** presented at National Conference on Breaking Barriers through Bioinformatics & Computational Biology July 31st and 1st Aug, 2017 at IIT Delhi



# DBT Star Status College: Hands –on Training



**Sri Venkateswara College**

University of Delhi

Benito Juarez Road, Dhaula Kuan, New Delhi - 110021

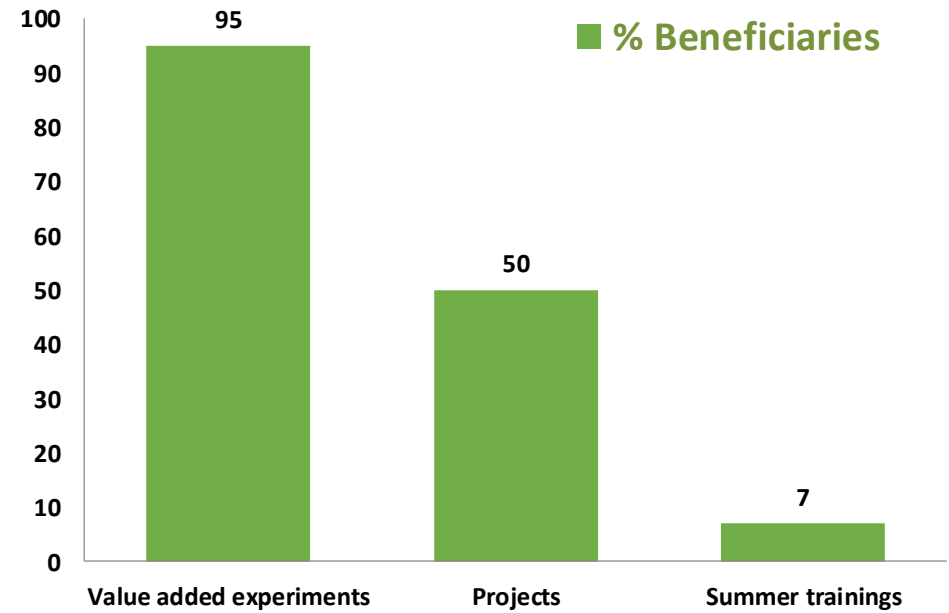
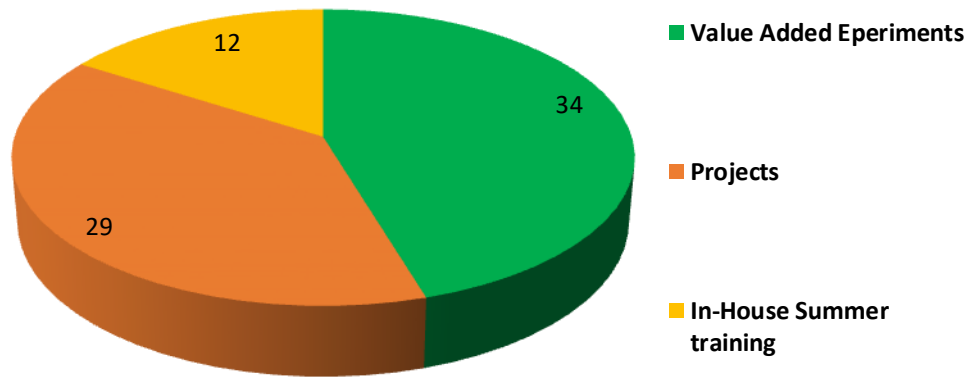
[www.svc.ac.in](http://www.svc.ac.in)



# Student Training

## Experiments

### Hands on Training





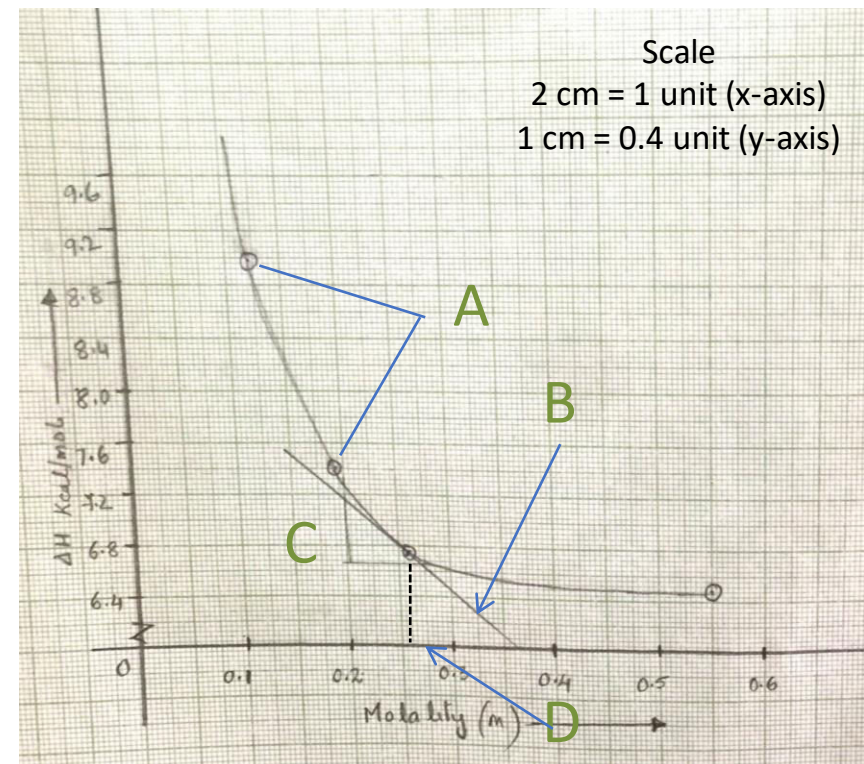


# Value Added Experiment

Determination of Differential Enthalpy of Solution for a given salt by thermochemical method

Experiment according to syllabus is to determine the Enthalpy of a salt at a given molality

- A. Integral Enthalpy of Solution at two different molalities
- B. Tangent drawn to required point of Concentration (molality)
- C. Slope of the tangent = Differential Enthalpy
- D. Differential Enthalpy to be determined at 0.25 m solution





# Value Added Experiment

## Passive agglutination test: Demonstration of heamaglutination test to identify antibody titre to a soluble antigen (BSA)

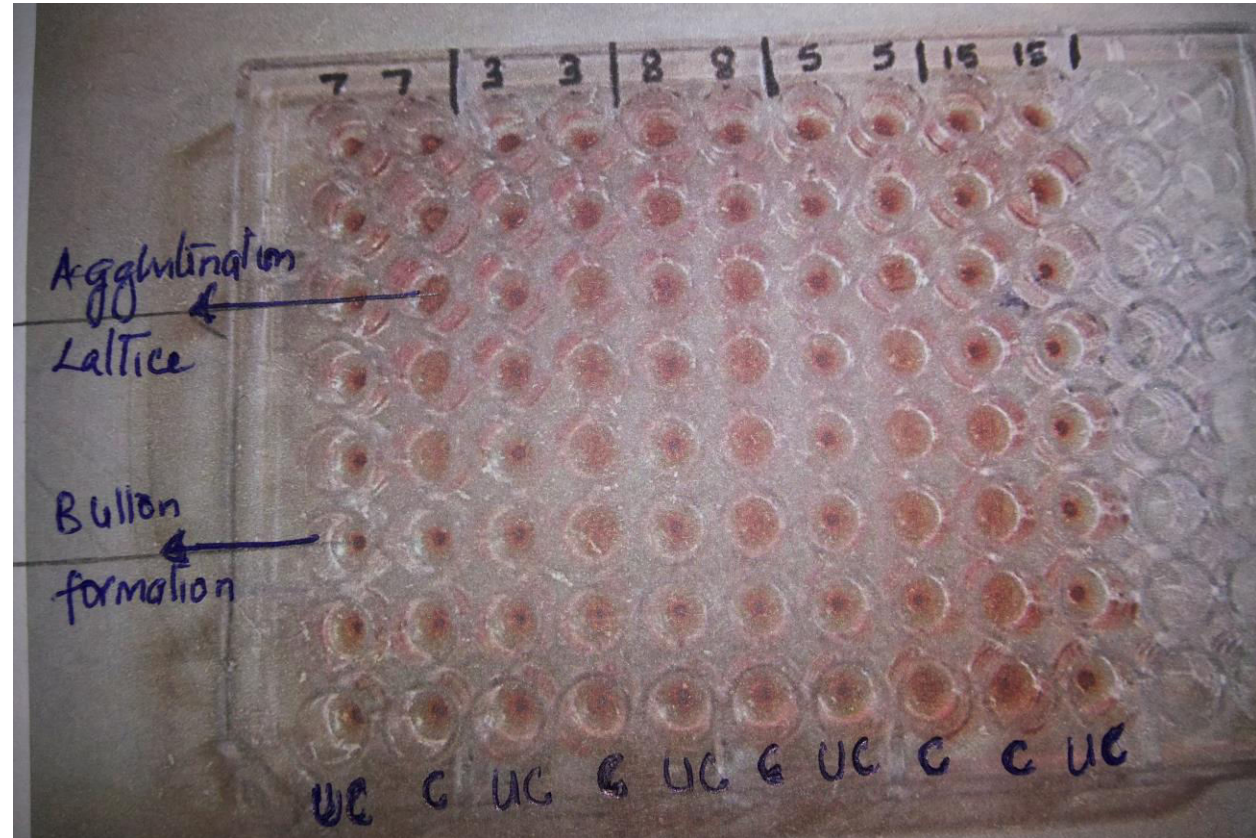
Soluble antigen BSA was coated onto saline washed RBCs using tannic acid

Serial dilution of anti BSA sera was done from 1:2 to 1:256 in 96 well microtiter plates using PBS

To one row of dilutions BSA coated RBCs was added and to another set uncoated RBCs were added

The plates were incubated at RT for 30 minutes

Results were observed; button like pellet of RBCs indicates no lattice formation

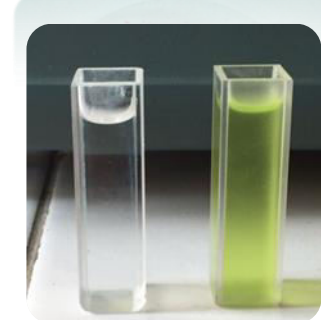
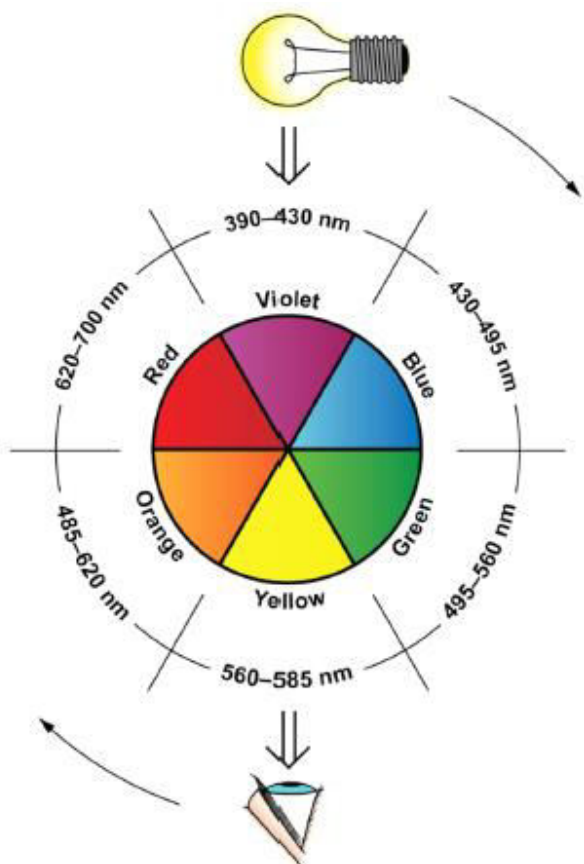






# Value Added Experiment

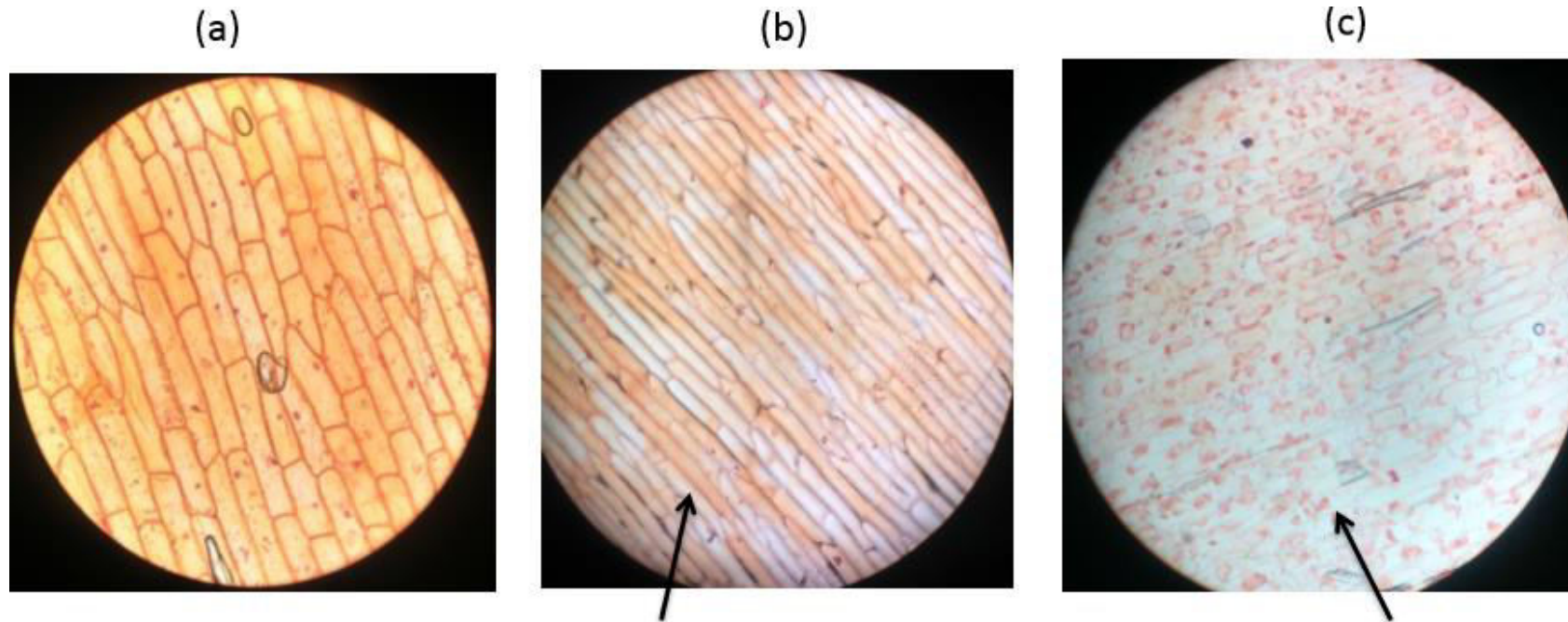
**Demonstration of the Spectrophotometric Complementary Color Wheel by determining Crystal Field Splitting Energies of synthesized complexes**





# Value Added Experiment

To study and visualize the effect of hypotonic and hypertonic solutions on the plant cells



Turgid and enlarged cells

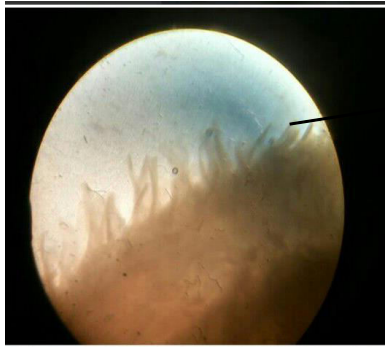
Flaccid and shrunken cells

Onion peel observed at 10X after treatment with (a) isotonic (b) hypotonic and (c) hypertonic solution



# Open Ended Experiment

Membrane permeability: Demonstration of sodium dependent Histidine transport across the mammalian intestinal brush border



Villi



Inverted Sac of Small Intestine (Chicken)

2.5mM KRP

2mM Phosphate buffer

Time (min)	Conc. Inside (mM)	Conc. Outside (mM)	Difference (mM)	Time (min)	Conc. Inside (mM)	Conc. Outside (mM)	Difference (mM)
15	0.116	0.264	0.148	15	0.097	0.231	0.134
30	0.150	0.236	0.086	30	0.126	0.221	0.095
60	<b>0.240</b>	0.238	<b>0.00</b>	60	<b>0.186</b>	0.223	<b>0.037</b>

Inverted sac were made from small intestine to expose mucosal side on the outer surface

The sacs were kept in varying concentration of NaCl with Histidine

Inside of the sac mimics the side exposed to blood and is filled with phosphate buffer, Glucose and 0.9% Saline

30 min, RT

Sacs were opened and were analyzed for Histidine concentration



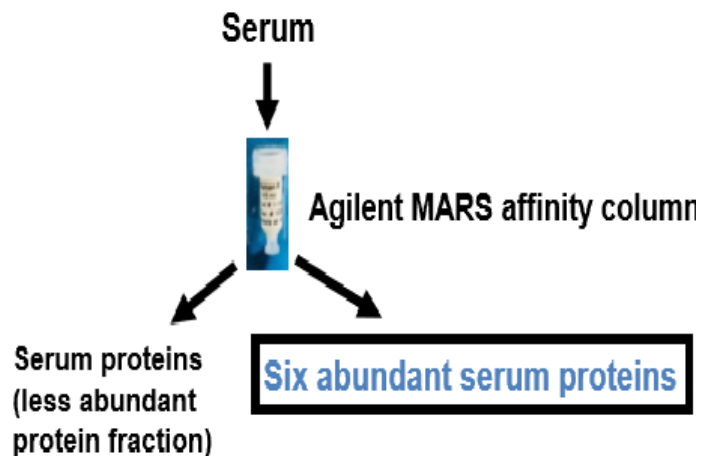
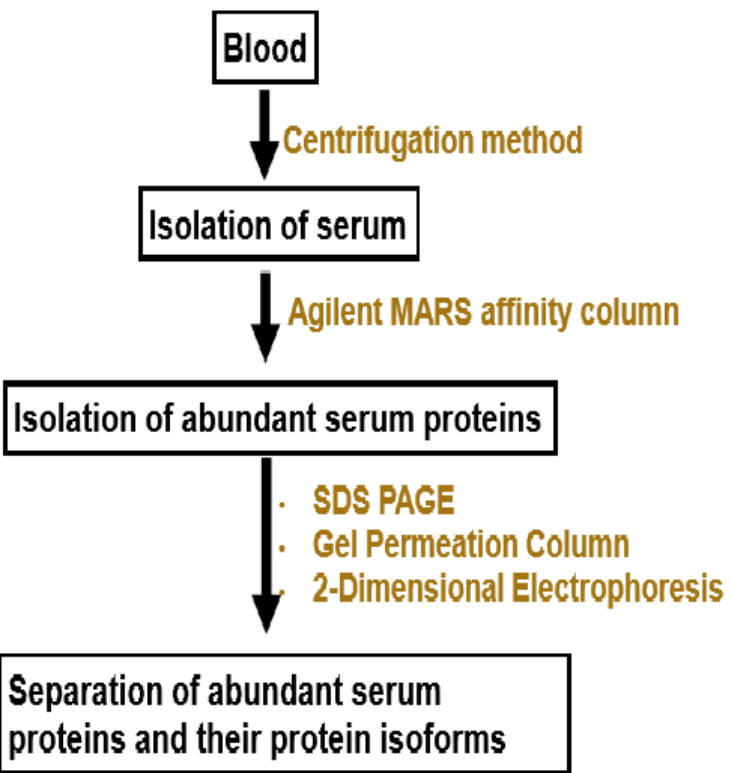


# Open Ended Experiment

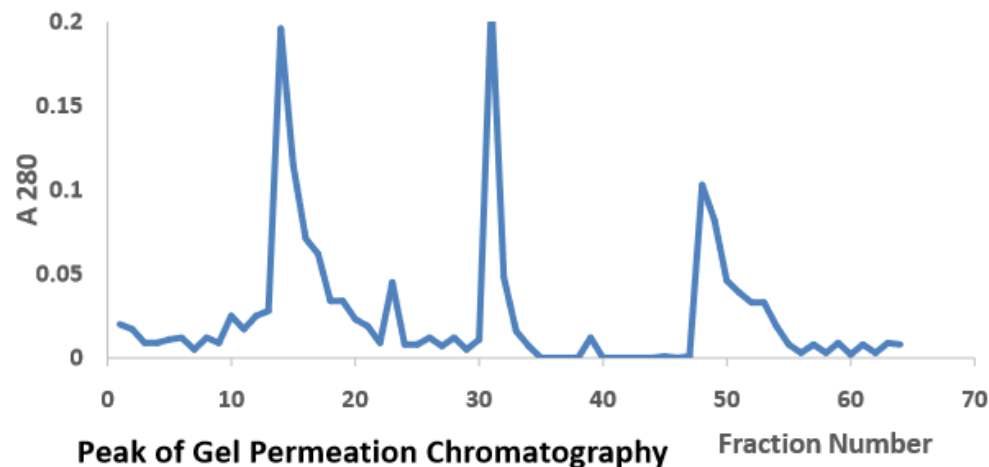
Characterization of abundant serum proteins and their isoforms using various biochemical techniques

## WORK FLOW

## Depletion of abundant proteins using affinity column



1. Albumin
2. IgG
3. IgA
4. Antitrypsin
5. Transferrin

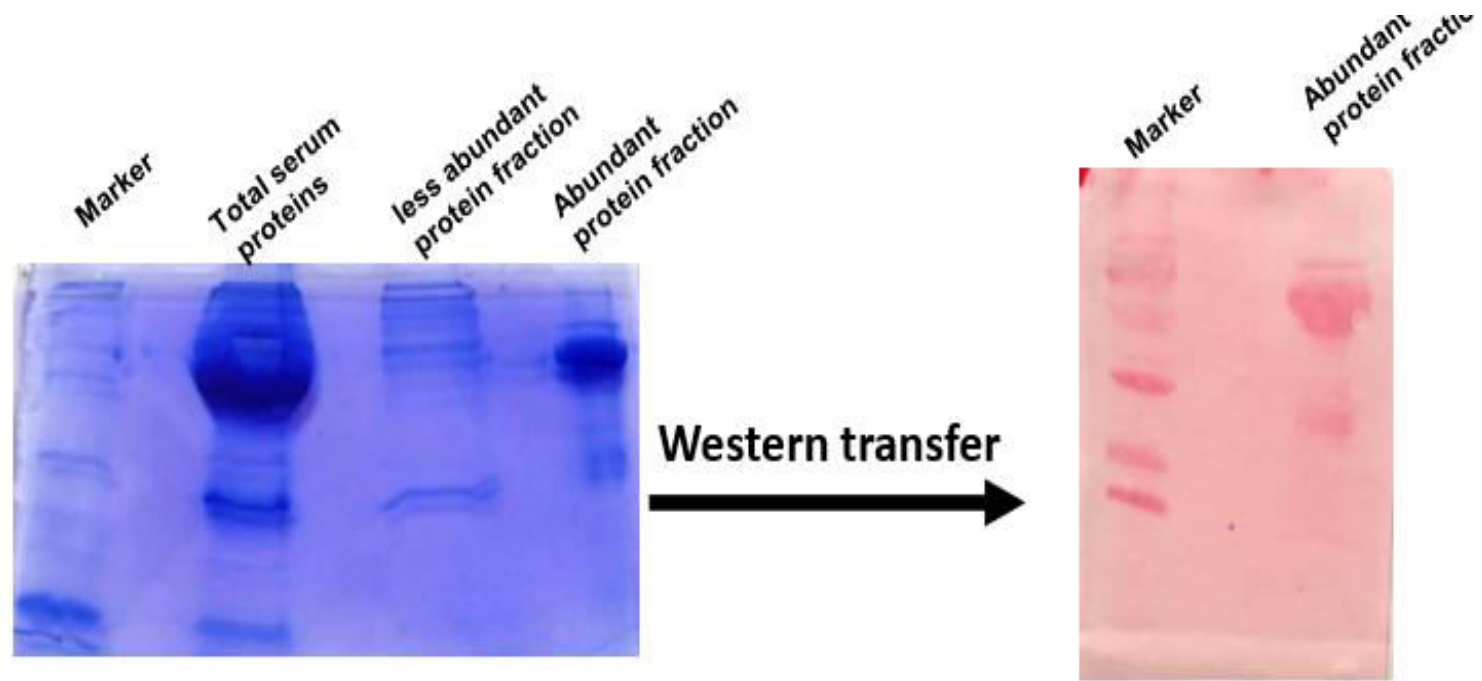
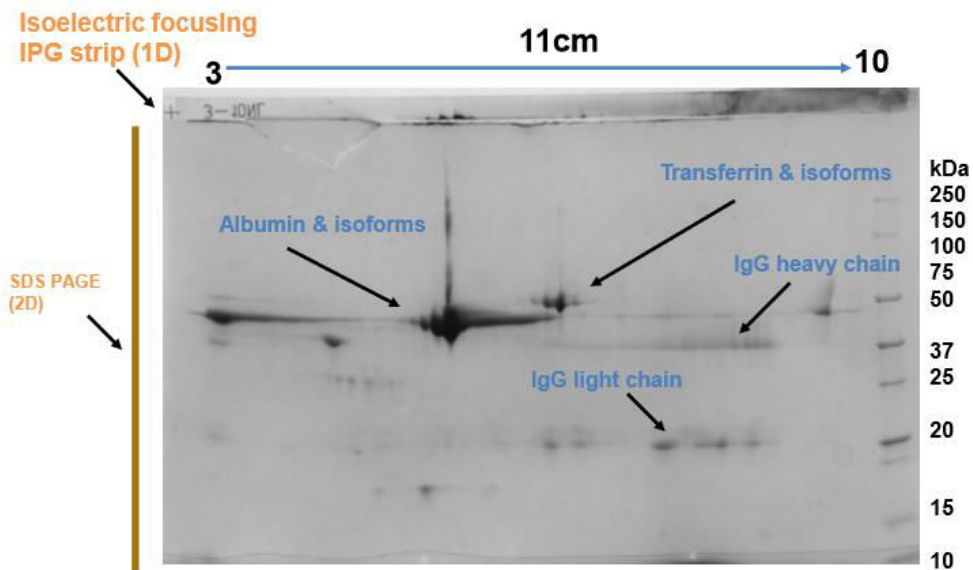






# Open Ended Experiment cont..

2-DE analysis of bound fraction (major six abundant proteins) Separated on 4% 20% gradient gel, stained with CBB R250



SDS PAGE Analysis of serum proteins 12% gel stained with Coomassie blue R250



# Student projects....

**Study of dissolved  $O_2$  content as a parameter to check pollution in water bodies.**



*Students Collecting water for Dissolved  $O_2$  content*

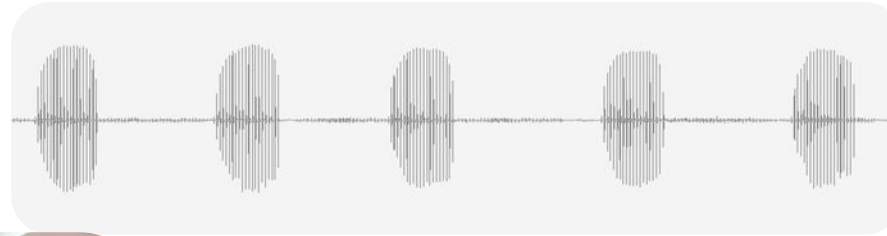






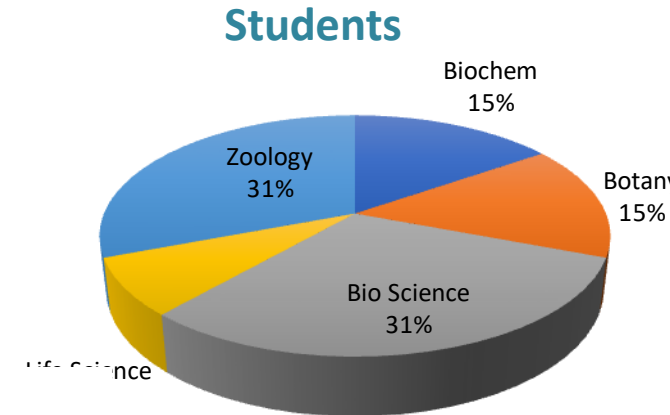
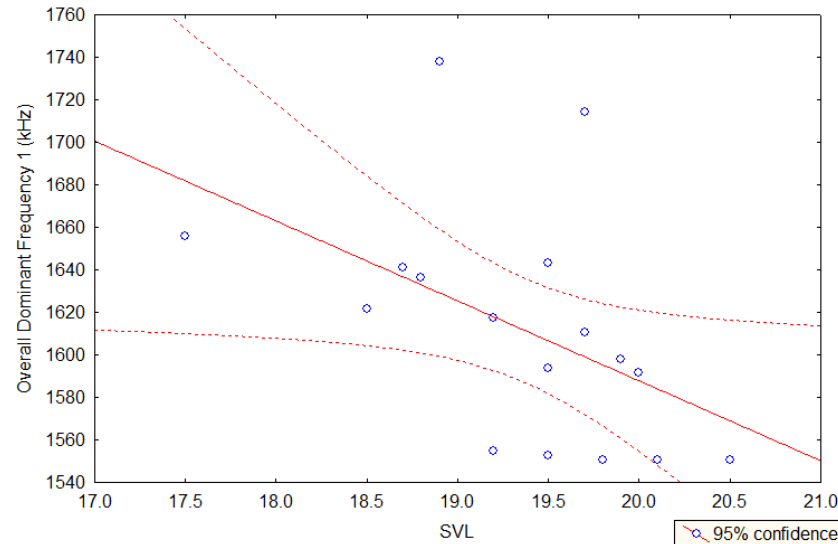
# Interdisciplinary Project

## Bio-statistical Analysis: Applications in Behavioral Studies on amphibians



Call (10 sec)

Scatterplot: SVL vs. Overall Dominant Frequency 1 (kHz)  
Overall Dominant Frequency 1 (kHz) =  $2339.6 - 37.59 * SVL$   
Correlation:  $r = -.4824$



This quantitative study of vocal behaviour by Sri Venkateswara College Students was selected for presentation at SCCS, Indian Institute of Science, Bengaluru, the largest International student conference in conservation science in the world and it is a sister conference of SCCS, Cambridge University