3.1.3.

Number of research projects per teacher funded by government and non government agencies during the last five years

2018-19

Name of the Principal Investigator/Co-investigator	Dr. Nandita Singh
Department of Principal Investigator	Zoology
Name of the Project/Endowments, Chairs	Molecular Profiling of Zinc and Lead induced toxicity in Tilapia-A Comparative study and it's Mitigation
Amount Sanctioned	30,000/-
Name of the Funding Agency	University of Mumbai

Project Summary

Molecular Profiling of Zinc and Lead induced toxicity in Tilapia-A Comparative study and it's Mitigation

Dr. Nandita Singh

Aquatic environment gets contaminated due to various pollutants and is a major area of study due to its harmful effects on aquatic environment, human health and other organisms (*Nelimia et al.,* 2017; *Devi and Banerjee,* 2007*)*. Heavy metals are of concern for aquatic ecosystem because of their toxicity, persistence and tendency to accumulate and cause damage to the ecosystem.

Metals, especially heavy metals, are one of the major contaminants of aquatic environments found worldwide. Technological advancement has lead to increased metal pollution. Zinc (Zn) and lead (Pb) are environmental pollutants. Zinc toxicity on various parameters of fish has been extensively done. Lead another a major environmental pollutant easily gets accumulated in the sediments of the aquatic ecosystem and can induce oxidative damage in aquatic organisms. Excessive heavy metal pollutants bring about changes in nucleic acid in fishes.

The project was under taken to study the damage at molecular level caused by zinc and lead on Tilapia *Oreochromis mosambicus.* Fish was treated with different concentrations of zinc and lead to determine the LC50 and sublethal concentration was selected for the study. Fishes were divided into different groups and exposed to zinc, lead, α-tochopherol, zinc + α-tochopherol and lead + α-tochopherol. At the end of exposure period, fish from each group treatment were netted and samples were collected. DNA, RNA and protein was estimated using standard procedures. The Level of DNA and RNA in gill showed an increase and a decrease in DNA was seen in liver of fishes treated with lead. The protein content in gills increased and decreased in liver.

Name of the Principal Investigator/Co-investigator	Dr. Vaishali Nirmalkar
Department of Principal Investigator	Botany
Name of the Project/Endowments, Chairs	Amylase production by fungal isolates under Solid State Fermentation Conditions
Amount Sanctioned	30,000/-
Name of the Funding Agency	University of Mumbai

Amylase production by fungal isolates under Solid State Fermentation Conditions

Dr. Vaishali Nirmalkar

In the present piece of research work fungi were isolated from different soil samples in Bhiwandi and studied for their amylase activity. Out of twenty fungal isolates two were found to be potent amylase producers. Primary and secondary screening methods were employed to isolate the potential fungi. Amylase activity was determined by solid state fermentation technique for a period of one week.

The isolates would prove to be potent amylase producers in industries.

Name of the Principal Investigator/Co-investigator	Dr.Mukesh Ramesh Pimpliskar
Department of Principal Investigator	Biotechnology
Name of the Project/Endowments, Chairs	Study of antioxidant activity of marine bacteria
Amount Sanctioned	20,000/-
Name of the Funding Agency	University of Mumbai

Study of antioxidant activity of marine bacteria

Dr.Mukesh Ramesh Pimpliskar

India has a very long and diverse coastline of 7517 KM, and this can serve as a renewable, reliable source of promising compounds produced by the diverse microflora spread over from the two horizontal zones — the coastal and the pelagic, to the benthic; which would probably bring revolutionary changes in the functioning of important industries such as medicine, agriculture, textile and cosmetics.

In recent years, there has been a great deal of attention toward the field of free radical chemistry. Free radicals reactive oxygen species and reactive nitrogen species are generated by our body by various endogenous systems, exposure to different physiochemical conditions or pathological states. A balance between free radicals and antioxidants is necessary for proper physiological function. If free radicals overwhelm the body's ability to regulate them, a condition known as oxidative stress ensues.

With the objective to evaluate antioxidant properties of marine bacteria, 27 marine isolates were purified and 10 found to be potential antioxidant property when compare activity with standard ascorbic acid. The percent radical scavenging activity (RSA) was calculated as: RSA (%) = (A0 –A1/A0) X 100 Where, A0 is the absorbance of control and A1 is the absorbance of test sample.

Bacterial cells were subjected to Gram staining and the morphology was studied under light microscope. Biochemical tests were done as described in Bergey’s manual of systematic bacteriology. The protocols for gram staining and various biochemical tests were followed as described in [Dubey & Maheshwari 2010]

On the basis of characterization and antioxidant properties the potent bacterial isolates were of *Bacillus sp., Psudomonas sp., Vibrio sp* and *Lysenibacillus sp.*

Further for characterization 16s rRNA sequencing to know the species and qualitative characterization of antioxidant compound will lead for better pharmacological analysis.

2017-18

Name of the Principal Investigator/Co-investigator	**Dr. Savitha Sukumar**
Department of Principal Investigator	**English**
Name of the Project/Endowments, Chairs	**Marginalized Narratives in the Fiction of Temsula Ao**
Amount Sanctioned	**75,000/-**
Name of the Funding Agency	**University of Mumbai**

Marginalized Narratives in the Fiction of Temsula Ao

Dr. Savitha Sukumar

Dr. Temsula Ao is a successful writer from North East who writes fiction from a predominantly North East point of view. Marginalization is defined as people who live in the periphery of the mainstream culture and do not get access to basic privileges and benefits. The North East population particularly has been vulnerable to marginalization and been in news for receiving brutal attacks due to their physical personality. Often students and professionals have borne the brunt of attack that has left them with low self esteem and deep trauma.

Temsula Ao in her fiction writes about the displacement and trauma faced by the North East characters in her short stories and novels like “These Hills Called Home” deal with the Naga insurgency and its consequences. The second short story collection titled “Laburnum for My Head” has mythical and modern overtones. These stories are sensitive, evocative and also powerful.

Reading of Temsula AO’s these stories put forth the question of ethnic Identity and possession of sovereign land as the Nagas confined to their distinct ethnic identity of holding a land that have been claiming their ancestral homeland which was an independent state and wanted to retain it without assimilating with the Indian Union but in claiming their sovereign land it cost lots lives.

Name of the Principal Investigator/Co-investigator	Dr. Moses J. Kolet (Botany) Dr. Subhashree Ghosh (Biotechnology)
Department of Principal Investigator	
Name of the Project/Endowments, Chairs	To develop suitable model of Paramoecium using Foldscope for ecotoxicological evaluation which may serve as bioindicator for water quality and to ascertain the interaction of human pathogenic fungus Cryptococcus neoformans and Paramoecium sp.
Amount Sanctioned	8,00,000/-
Name of the Funding Agency	Department of Biotechnology

To develop suitable model of *Paramoecium* using Foldscope for ecotoxicological evaluation which may serve as bioindicator for water quality and to ascertain the interaction of human pathogenic fungus *Cryptococcus neoformans* and *Paramoecium* sp.

Dr. Moses J. Kolet
Dr. Subhashree Ghosh

To isolate *Paramoecium* from water, 10 water samples were collected from different areas of Bhiwandi city. Hey media was used to culture *Paramoecium* in laboratory and presence of *Paramoecium* spp. was confirmed by visualizing them under foldscope. To determine the ability of *Paramoecium* to survive in various concentrations of three different heavy metals: Ferrous Sulphate (FeSO4), Mercuric Chloride (HgCl2) and zinc chloride (ZnCl2), Cobalt (II) chloride ($CoCl_2$), Nickel Chloride ($NiCl_2$) and Copper Sulphate($CuSO_4$). The ciliates were incubated in solutions with 0.3 to 1.5 ppm of FeSO4, 0.01 to 0.05ppm of HgCl2, 0.10 to 0.95 ppm of ZnCl2 and 0.06 to 0.36ppm of $CoCl_2$, at the room temperature. Using Fold-scope, microscopic observations of cell divisions rate was conducted after 24, 48, 72 and 120 hours of incubation in the tested solutions and was compared to the control sample. Microscopic observations revealed that *Paramoecium* from all the samples showed maximum growth in all three different concentrations of ferrous and Zinc but only sample 3 showed constant growth in the presence of different concentrations of Mercury and nickel and no growth were observed in Cobalt concentrations so we can say that *Paramoecium* in sample 3 has potential to survive in higher concentrations of mercury and nickel hence they are suitable to be used as bio-indicator for mercury and nickel. Study was carried out by using foldscope for visualization. To ascertain the interaction of human pathogenic fungus *Cryptococcus neoformans* and *Paramoecium* species, *Cryptococcus neoformans* was isolated from garden soil sample from KMES Campus. Well isolated colonies were obtained on *Cryptococcus*

differential agar and sabouraud dextrose agar media and on the basis of morphological characteristics *C. neoformans* colonies were identified and the suspension was prepared for the further use. India Ink was used for the staining of *C. neoformans* to visualize under foldscope. Stained *C. neoformans* as suspended into *Paramoecium* from all 10 samples collected and it was found that *Paramoecium* have potential to be used against human pathogen *C. neoformans*.

Name of the Principal Investigator/Co-investigator	Dr. Moses Kolet (Botany) Mrs. Jayashree Thakre (Chemistry) Dr. Vaishali Nirmalkar (Botany) Dr. Shaziya Momin (Chemistry)
Department of Principal Investigator	
Name of the Project/Endowments, Chairs	Encouraging, Promoting and Developing Entrepreneurship Skills amongst Muslim Minority Girl Students in Bhiwandi
Amount Sanctioned	1,00,000/-
Name of the Funding Agency	Maharashtra State Commission For Women

Encouraging, Promoting and Developing Entrepreneurship Skills amongst Muslim Minority Girl Students in Bhiwandi

Dr. Moses Kolet
Mrs. Jayashree Thakre
Dr. Vaishali Nirmalkar
Dr. Shaziya Momin

This project has examined the opportunities for Muslim young girls to develop their skills, and the constraints that challenge them. Today, young girls face complex and enormous challenges in fostering skills development, for several reasons: the size of the youth population, and the hierarchical and segmented nature of both the labor market and society as a whole. A tiny fraction from economically well-off middle classes get good education and training and well-paid jobs in the organized sector on the other hand majority of youth from economically and socially disadvantaged groups get very limited education and little access to vocational training. They work in the unorganized sector. The majority of female child enter the labor market without adequate vocational skills, leading to unstable, informal, low-wage employment, such as casual labor and various forms of self-employment.

Muslim minority girls' students from G. M. Momin Women's college developed an entrepreneurship skill among themselves. Dependent variable of skill development in the Muslim minority girl students (220) was achieved. The independent variable i.e. conduction of ten different courses like Flower making, Mehendi making, cake baking, Beauty tips, Plant Tissue Culture, Calibration and standardization English speaking, Basic computer, Stitching and Tally are also accomplished. Also students themselves acted as a resource person for

most of the courses. Efforts were made to develop entrepreneurship skill amongst 220 girls, keeping in mind that they may set up their own business and help in Skill India.

CONCLUSION: The studies find out the overall status of skill capacity available, skill requirement, skill gap and initiatives taken by Government of India for Skill Development. To make MAKE IN INDIA project successful, youth of the nation should be empowered with formal education, technical and vocational training to meet the Industrial requirement as per global standard. Skill development idea helps youths to raise their confidence and improve their productivity. The Skill India concept provides support, training and guidance for all occupations like construction, textile, transportation, agriculture, weaving, handicraft, horticulture, fishing and various other sectors along with language and communication skills, life skills, and personality development skills, management skills including job and employability skills.

Following are some of the personal and social capabilities, which were developed as result of taking up various skill orientated training among Muslim minority girls:

Economic empowerment

Improved standard of living

Self confidence

Enhance awareness

Sense of achievement

Increased social interaction

Increased participation level in meeting

Improvement in leadership qualities

Involvement in solving problems related to women and community

Decision making capacity in family and community

2016-17

Name of the Principal Investigator/Co-investigator	Dr. Tarannum Shaikh
Department of Principal Investigator	Physics
Name of the Project/Endowments, Chairs	Water soluble (Ln^{3+}) doped nanoparticles : retention of strong luminescence and potential biomedical applications
Amount Sanctioned	25,000/-
Name of the Funding Agency	University of Mumbai

Water soluble (Ln^{3+}) doped nanoparticles : retention of strong luminescence and potential biomedical applications

Dr.Tarannum Shaikh

$LaF_3:Nd^{3+},Ho^{3+}$ nanocrystals have been successfully synthesized using $LaCl_3$ and NH_4F in deionized water. The XRD analysis shows hexagonal crystal structure with a = b = 7.098 A^0 and c = 7.230 A^0, Space group: P3c1 (165) ($\alpha = \beta = 90^0$ and $\gamma = 120^0$). TEM studies shows that the nanoparticles are in the form of hexagonal shapes and are well dispersed with some instances of agglomeration. From the UV-Visible spectrum of the synthesized LaF_3: Nd^{3+}, Ho^{3+} nanocrystals,various absorption edges can be observed at 257nm, 280nm, 294nm and 337nm with the corresponding energies E_1= 4.838eV, E_2= 4.441eV, E_3= 4.229eV and E_4=3.686eV. The PL spectra of synthesized nanoparticles indicate that the nanoparticles have been excited at 330nm with the emission peak centred at 629 nm which indicates the upconversion nature of the nanocrystals corresponding to red colored emission from the nanocrystals. The dielectric properties of the synthesized samples were studied by plotting the graphs(i) dielectric constant versus log of frequency(ii) dielectric loss versus log of frequency (iii) log of dielectric loss versus log of frequency and iv) Tanδ versus log of frequency. Room temperature resistivity of the synthesized sample was 1700.680 Ωcm. The conductivity of the synthesised LaF_3: Nd^{3+}, Ho^{3+} sample at room temperature is found to be of the order of 10^{-3}/ Ωcm. Thus by doping LaF_3 the ionic conductivity of the sample is observed to be enhanced. Attempt has been made to study biological application of the synthesized material. The results of antimicrobial activity of synthesized nanoparticles.At 500µg/disc and 1mg/disc concentration the test substance showed effective activity against *Pseudomonas aeroginosa* and *Salmonella typhi* becteria. The slight inhibition of *E. coli* bacterial strain was observed at very high concentration but this activity was found to be negligible.

Name of the Principal Investigator/Co-investigator	**Dr. Shaziya Momin**
Department of Principal Investigator	**Chemistry**
Name of the Project/Endowments, Chairs	**Synthesis, Fabrication and Characterisation of Ion Selective Electrode**
Amount Sanctioned	**30,000/-**
Name of the Funding Agency	**University of Mumbai**

Synthesis, Fabrication and Characterisation of Ion Selective Electrode

Dr. Shaziya Momin

The metal ion selective electrode is fabricated and characterized by pH metry and potentiometry by measurement of potential. The reliability of this electrode is assessed by carrying out the experiments with the environmental samples and the result obtained by this technique is compared with the other known and suitable technique like UV- Visible spectrophotometry and it was found that the amount of heavy metals in the environmental samples are less than the values prescribed by the standard body.

Name of the Principal Investigator/Co-investigator	Ms.Nazneen Momin
Department of Principal Investigator	Commerce
Name of the Project/Endowments, Chairs	Study of impact of social media on consumer behavior
Amount Sanctioned	26,000/-
Name of the Funding Agency	University of Mumbai

Study of impact of social media on consumer behaviour

Ms.Nazneen Momin

In the era of technology the consumer has a good impact of social media. The consumer would able to access and communicate to any company about the product and company also using social media for maintaining relation with consumer which has a great advantage for company and for consumer. Effective use also beneficial for consumer all new updates to be communicated to consumer using online media especially advertisement on internet has a great influence on consumer.

The following are type of online business.

1) Business to business (B2B)

2) Business to consumer (B2C)

3) Consumer to consumer (C2C)

In this type of marketing the party needs to not to meet officially with each other they can fix their dealing and transfer over mail & internet. This save time and money and deal to be fixed. Here the consumer get directly in touch with company where some time they give advice and suggestion company for improvement.OLX.com is best example of consumer to consumer their they can sale and purchase second hand and used item they need not have a agent.

Business to business (B2B) One company come address across for a business to with company may be as a supplier or customer may debtors and editions. Many companies face same kind of problems for survival of market therefore they exchange, idea, service, discuss, share, inform communicate with each other B2B would be beneficial for the companies who actually involved in B2B with the help of internet.

Business to Consumer (B2C) It is a business between company and consumer. Here the consumers directly approach to the company for purchase of goods no interference of middlevoan, retailer and shopkeeper. They get an opportunity to talk to company directly even company get an opportunity to have first information, data regarding product, which

will be very useful for company for research and development. The company need not depend on other market e-cement for information.

Consumer to Consumer (C2C). It is a business between to consumer have one person purchase goods from other person both are not running business they are ordinary man. It is cost effective process OLX.com is best example of C2C. Here consumer share, discuss, orbit the feedback and view of consumers. Many companies have wanted to be part of consumer interaction their feedback and opinion about the product.

When consumer spend time and purchase from internet the consumer may suffer risk. As a consumer he has to bear the risk whereas it a responsibility of company to bear the risk. The company has to develop hassle and hurdle free transaction to attract more and more consumer by providing them cash on delivery and irrespective of pincode number even no extra charges for shipping and transportation

Still most of the consumers are ready to purchase online but at the same they find it difficult for payment. New inline shopping portal has been launch by many companies ultimately it has a effect for offline market. If a consumer prefer online market the business offline suffer but when consumer prefer offline market the business online may not be suffer because inline has a consumer all over world. This online shopping is also a part of country development. Majority of people prefer to purchase from online as it saves time and money.

Still many consumers are not satisfied with the security of data of consumers which may be leaked on internet. Online shopping portal should follow ethics & values while dealing with the customers and the same time provide them importance.

Sometimes, quality of the products doesn't meet the consumer expectations. While purchasing from social media the consumer should take care about credit card payments and check quality. Consumer should not always trust on feedback and evaluation. Any invention has two kind of effect it is upto the society how they take up changes.

Name of the Principal Investigator/Co-investigator	Dr. Ambreen Safder Kharbe
Department of Principal Investigator	English
Name of the Project/Endowments, Chairs	Ecocritism in the Novels of Kamala Markanday And Margaret Atwood
Amount Sanctioned	26,000/-
Name of the Funding Agency	University of Mumbai

Ecocriticism in the Selected Novels of Kamala Markanday And Margaret Atwood

Dr. Ambreen Safder Kharbe

Ecocriticism is as a distinctive approach to the practice of literary criticism. It gives increased attention to literary representations of nature and is sensitive to interdependencies of nature a man. The study is a cautionary warning to mankind that the exploitation of nature over a period of time will lead to an outburst of nature. This approach shifts critical focus from social relations toward natural relationships and views the individual as a member of ecosystem. More and more works of different writers have been published which could be read under this school of criticism.

Applying ecology or ecological concepts and themes to literary criticism proves to be an enhancing process to literary studies. As more and more environmental theorists make a call for an inward transformation in the humanities, literary theorists cannot ignore the presence of interconnections between nature and culture, particularly the fact that cultural dimensions of literature do influence and are influenced by the environmental issues.

Kamala Markandaya expressed the need to preserve nature. She explicates that human life is closely linked with nature. She argues in *Nectar in a Sieve* that callous policies are responsible for the degradation of nature and the poverty of the people. Natural degradation causes drought which has unavoidable consequences on the people who live in a specific area where it has occurred. She argues that industries pollute the atmosphere and undermine the quality of life of local residents. Nature is integral part of human culture and civilisation. With the death of nature, human culture and civilisation will come to an end on the planet. Markandaya has portrayed the contemporary India, facing the problems like ecological crisis, value crisis, social and economic breakdown. Human life cannot survive without Nature. She distrusts the advantages brought by industrialisation.

On the other hand Canada is culturally a schizophrenic nation, split between French and English influences both in its language and history and presently affected strongly by its brash neighbour – the U.S. In Canada, ecofeminism can be characterised as one in which writers tend to reveal an analogy between the relationships of man and woman and those of the imperial power and the colony. Ecofeminist tenets find voice in the Canadian narrative tradition through the framework of national politics in which Canada is perceived as the victim. Right from the beginning the Canadians apprehension regarding the emptiness of the Canadian landscape and the oppressiveness of nations like the US found expression in the term garrison mentality. Atwood reiterates the ecofeminist belief of life being one interconnected web. Atwood deconstructs the dualities of culture/nature and male/female and envisages a third way which is to be outside of either of the alternatives.

Often referred to as a feminist/ ecological treatise, *Surfacing* reflects the politics and issues of the postmodern society. It stands out as a powerful testament to the sacredness of all forms of life. The narrator on her return to the island searches for her missing father. She unmasks the dualities present in both her personal life and the patriarchal society. Her quest leads to a struggle to reclaim her identity as roots. Like the journey itself, the language, events and characters reflect a world that oppresses and dominates both feminity and nature. Ecofeminist theory establishes itself through references to patriarchal dualities between masculine and feminine world and thus to the domination and oppression of feminine/natural world which eventually led to her own inner turmoil.

Thus the project through an ecocritical approach, has analyzed the environmental disaster due to man's deeds under his selfishness. Further both are concerned with mankind and make world aware about the ongoing disaster due to environment degradation.

2014-15

Name of the Principal Investigator/Co-investigator	Dr.Taranum Attar
Department of Principal Investigator	Physics
Name of the Project/Endowments, Chairs	Synthesis, characterization and luminescence of rare earth doped lanthanum fluoride nanoparticles
Amount Sanctioned	1,45,000/-
Name of the Funding Agency	UGC

SYNTHESIS, CHARACTERISATION AND LUMINESCENCE OF RARE EARTH DOPED LANTHANUM FLUORIDE NANOPARTICLES

Dr.Tarannum Attar

Two water soluble LaF_3 doped nanocrystals (LaF_3:Ce^{3+}, Sm^{3+}) and (LaF_3: Sm^{3+}, Ho^{3+}), with new dopants have been successfully synthesized by precipitation method using deionised water as solvent. The synthesised LaF_3 nanocrystals were seen to possess good crystallinity and phase purity. This method has advantage of being simple and economical. Use of microwave radiation helps in reducing agglomeration getting the product faster and in less time. The successful synthesis of nanoparticles indicates the heterogeneous nucleation of the nanoparticles due to the interfacial surface tension. The synthesized materials are found to be chemically and thermally stable and can be obtained using low cost technique, and appear as promising materials for technological applications.

The phase and preliminary estimation of particle size was studied by X-ray diffraction (XRD) which points to orthorhombic structure for the mentioned nanoparticles. Synthesis and their characterization using various techniques such as X-ray diffraction (XRD), Transmission Electron microscope (TEM), Fourier Transform Infrared (FTIR), Photoluminescence Spectra (PL Spectra), Electrical Characteristics etc. were used to characterize them.