

Dr. Ayesha Latif

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Major importance of work is on Cotton crop plants, which is the backbone of Pakistan economy. Cotton crop regardless of its importance faces severe problem of biotic and abiotic stresses. Biotic stresses accounts for 70% of the total losses and major among those are caused by insects 25-30%, weeds 30% and viruses 30-35%. To combat such problems local cotton varieties were genetically modified by using Bt genes for insects, EPSPS gene for weeds and RNAi technology to control CLCuV. Almost 95-99% control of chewing insects of cotton was attained in transgenic cotton plants and the transgenic germplasm developed is now available in the form of cotton varieties namely CEMB 33, CA 12 and CEMB 66. The first two are already approved and being utilized for the farmers now a days. Similarly, Herbicide resistant cotton developed in my group is showing almost 99% weed control after single spray of glyphosate saving input in the form labor and plant losses occur due to invading weeds in the field conditions. Improvement in cotton fiber quality (*Hirsutum* and *Arboreum*) by transformation of different fiber related genes is one of main achievement. Want to work in a challenging environment, where task achievement and meeting the deadlines matters. To facilitate people of my country by providing them services in an Educational/Research environment. Want to work with energetic and sharp professionals in a true professional environment.

Summary:

- **Seventeen years** of extensive experience in the field of Biotechnology and Molecular biology regarding improvement in Cotton crop.
- **Twenty-nine research papers** have been published in national/ international journals/conferences.

Education:

Certificate/ Degree	Board/University	Year of passing	Subject (s)
Ph.D	University of the Punjab	2020	Molecular Biology
M.phil	University of the Punjab	2004	Molecular Biology
M.Sc.	Agriculture university Faisalabad	2002	Bio Chemistry
B.Sc.	University of the Punjab	2000	Chemistry, Botany, Zoology
F.Sc.	Faisalabad board	1998	Chemistry, Physics, Biology
O,levels	University of Cambridge	1996	Science

Research Publications:

TITLE	YEAR	JOURNAL	Impact Factor
Expression of Calotropis Procera expansin gene CpEXPA3 enhances cotton fibre strength.	2013	Australian journal of crop science	1.600
Nanotechnology: A new frontier in agriculture	2014	Advancement in life sciences	0.00
Genetic effects of Calotropis procera CpTIP1 gene on fiber quality in cotton(Gossypium hirsutum)	2014	Advancement in life sciences	0.00
Defence strategies of cotton against whitefly transmitted CLCuV and Begomoviruses	2015	Advancement in life sciences	0.00
Herbicide-resistant cotton (Gossypium hirsutum plant: an alternative way of manual weed removal)	2015	BMC research notes	0.00
Transformation and evaluation of Cry1Ac +Cry2A and GTGene in Gossypium hirsutum L	2015	Frontier of plant science	4.402
E.coli expression of NDV fusion protein gene and determination of its antigenic epitopes.	2015	Biologia	0.811
Analysis of Genetically modified BT and cp4EPSPS cotton cultivars for transformation efficiency, acclimatization, expression and toxic levels to insects.	2016	Plant breeding	

A concise review of poultry vaccination and future implementation of plant-based vaccines poultry science	2017	World poultry science	1.802
Management of Biotic Stress in Cotton	2017	ICAC Recorder	0.0
Sucrose synthase gene, a way forward for cotton fiber improvement	2018	Biologia	0.811
Trackable CEMB-Klean Cotton Transgenic Technology: Affordable Climate Neutral Agri-biotech Industrialization for Developing Countries	2019	Adv Life Sci	0.0
Role of Oral vaccine as an edible tool to prevent infectious diseases	2019	Acta Virologica	0.793
A Combinational approach of enhanced methanol production and double Bt genes for broad spectrum insect resistance in transgenic cotton	2019	Molecular Biotechnology	2.022
Cotton Fibre Quality Management for Sustainable Textile Industry	2019	ICAC Recorder	0.0
Structure-Based Prediction of Protein-Protein Interactions between GhWlim5 Domain1 and GhACTIN-1 Proteins: A practical evidence with improved fiber strength	2020	Journal of Plant Biochemistry and Biotechnology	0.773
Overexpression of a sucrose synthase gene Indirectly improves cotton fiber quality through sucrose cleavage	2020	Frontiers in Plant Sciences	4.402
Early Stage development of New Castle Disease Vaccine candidate in corn	2020	Frontiers in Veterinary Sciences	2.245
Constitutive expression of Asparaginase in <i>G. hirsutum</i> triggers insecticidal activity against <i>B. tabaci</i>	2020	Nature Scientific Reports	3.998
Transformation and evaluation of Broad-Spectrum insect and weedicide resistant genes in <i>Gossypium arboreum</i> (Desi Cotton)	2021	GM Crop & Food	3.44
Development of broad-spectrum and sustainable resistance in cotton against major insects through the combination of Bt and plant lectin genes	2021	Plant Cell Reports	3.82
Enhancing the resilience of transgenic cotton for insect resistance	2021	Molecular biology reports	2.316
In Silico Prediction and Evaluation of E. coli Expressed Recombinant HA Protein of Avian Influenza Virus	2021	Pakistan journal of zoology	0.831
Novel approaches to circumvent the devastating effects of pests on sugarcane	2021	Nature Scientific Reports	3.998

GM Technology and Fiber Traits	2021	Cotton Precision Breeding	
Enhanced expression of plasma membrane intrinsic protein 2 improves cotton fiber length in <i>Gossypium arboreum</i>	2022	Molecular biology reports	2.316

Research Projects:

Project 1: Co PI

Genetic improvement of cotton for Herbicide and boll worm tolerance working as team scientist (Co-PI) in PARB project 191 **2010-2017**

Project 2: Co PI

Transformation of gene constructs and genetically-engineered germplasm resources/commercial genotypes resistant to develop cotton leaf curl disease and/or its insect vector working as Scientist in Pak US ICARDA Project to control CLCuV Funded by USDA **2011-2017**

Project 3: PI

An Alternative Approach To Combat Pink Bollworm Infestation In Cotton Funded by Higher Education Commission of Pakistan (HEC) **2018-2021**

Workshop/Conferences Conducted/Attended/Participated

- **31st October 2013 participate in International Symposium Entitled** “Nanomaterials-Potential Applications and Challenges”. Organized by Department of Chemistry, SBA School of Sciences & Engineering.
- **18-20 February 2014 participated in conference Entitled** “First International Conference on Applied Chemical, Biological and Aquatic Science (ICACBAS 2014) ”organized by Faculty of Science & Technology GC University of Faisalabad.
- **18-19 March 2014 Member of Organizing Committee in training workshop Entitled** “The Development and Training of transgenic for Cotton Leaf Curl Virus (CLCuV) Disease Resistance” Organized by Centre of Excellence in Molecular Biology.
- **29-31 December 2015 Member of Organizing Committee in International Symposium Entitled** “Advances in Molecular Biology of Plants and Health sciences” Organized by Centre of Excellence in Molecular Biology.
- **7-9 March 2016 Member of Organizing Committee in Workshop entitled as** Basic Biotechnology Techniques. Organized by NAYS & CEMB
- **2 June 2016 participated in** National workshop on CRISPR/CAS9 genome editing technology. Organized by Congress of Molecular Biology
- **12-16 December 2016 Member of Organizing Committee in** Planning of cotton production, land preparation, weed control pest and disease control and harvesting. Organized Congress of Molecular Biology.

- **7-9 March 2016 participated in** ICGEB course on BASIC BIOTECHNOLOGY TECHNIQUES. Organized by CEMB
- **8 September 2017 Member of Organizing Committee** in 6th Invention to innovation summit. Organized by University of Punjab.
- **23 August 2017 Member of Organizing Committee** in training workshop on behavioral based biosafety culture. Organized by CEMB.
- **21-23 November 2017 Member of organizing Committee** in Advances in Molecular Biology of Plants and Health Sciences. Organized by CEMB.
- **20 July 2018 Participated** in Risk assessment of genetically modified (GM) crops. Organized by CEMB.

Current Status:

Presently I am working as Research Officer cum lecturer in National Center of Excellence in Molecular Biology (CEMB) University of the Punjab Lahore. I have been enrolled as PhD Research scholar since 2014 and my research work is in process.

Research Projects/Activities:

Research Project M.Sc:

In vitro plasma protein binding of Moxycloxacillin

Research Project M.Phil:

Haplotype analysis of DFN B12/usher1D locus in hearing impaired families

Research Project PhD in process:

Transformation of Fiber Elongating genes in cotton.

Ongoing Work in CEMB

Presently I am working on genetic transformation of various agricultural crops.

Other Research Activities:

- Cloning
- Transformation in cotton
- Molecular analysis of transformed plants
- Genotyping
- Sequencing

Skills/Techniques :

- Tissue culturing
- Plasmid isolation by mini and maxi prep
- Cloning
- Transformation

- Western Blot
- Southern blot
- SDS gel electrophoresis
- Dot blot
- Chromatography
- PCR
- Fermentation
- Bacterial culturing

Languages:

	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Urdu	Excellent	Excellent	Excellent

References:

References will be furnished upon request.