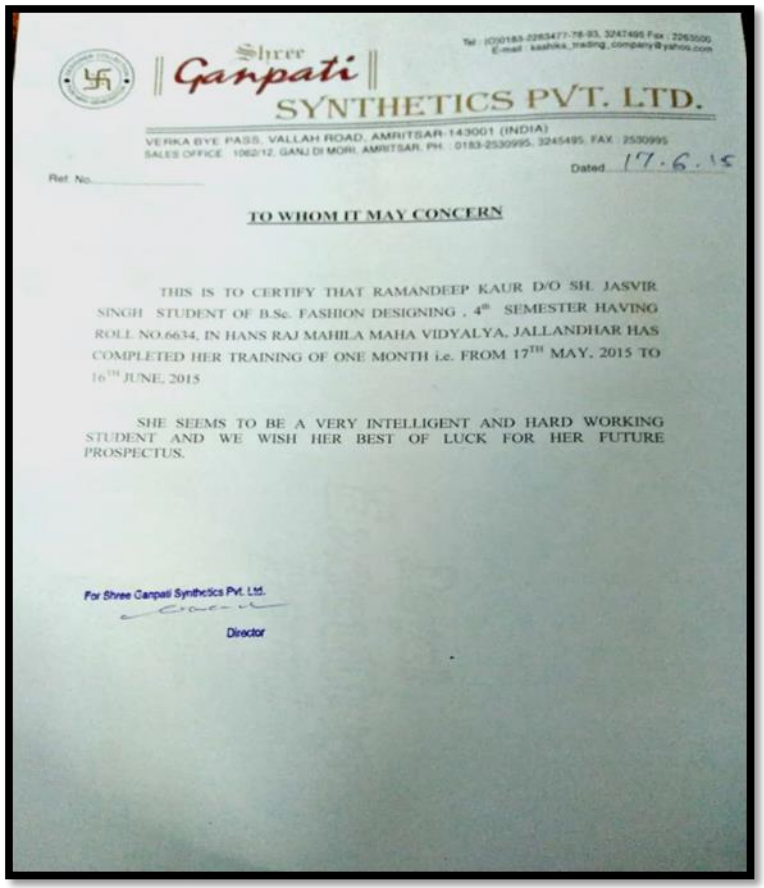
		2014-15		
S. No.	**Name of Organization**	**Session**	**Activities**	**Relevant Document**
1	Australian Genome Research Initiative	2014-15	Capacity Building Activity: Workshop on Bio informatics for Next Generation Sequencing Technologies	

2	Shree Ganpati Synthetics Pvt. Ltd. Amritsar.	2014-15	Student Internship	

Shree Ganpati SYNTHETICS PVT. LTD.

VERKA BYE PASS, VALLAH ROAD, AMRITSAR-143001 (INDIA)
SALES OFFICE 1062/12, GANJ DI MORI, AMRITSAR, PH. : 0183-2530995, 3245495, FAX : 2530995

Ref. No. _____ Dated 17.6.15

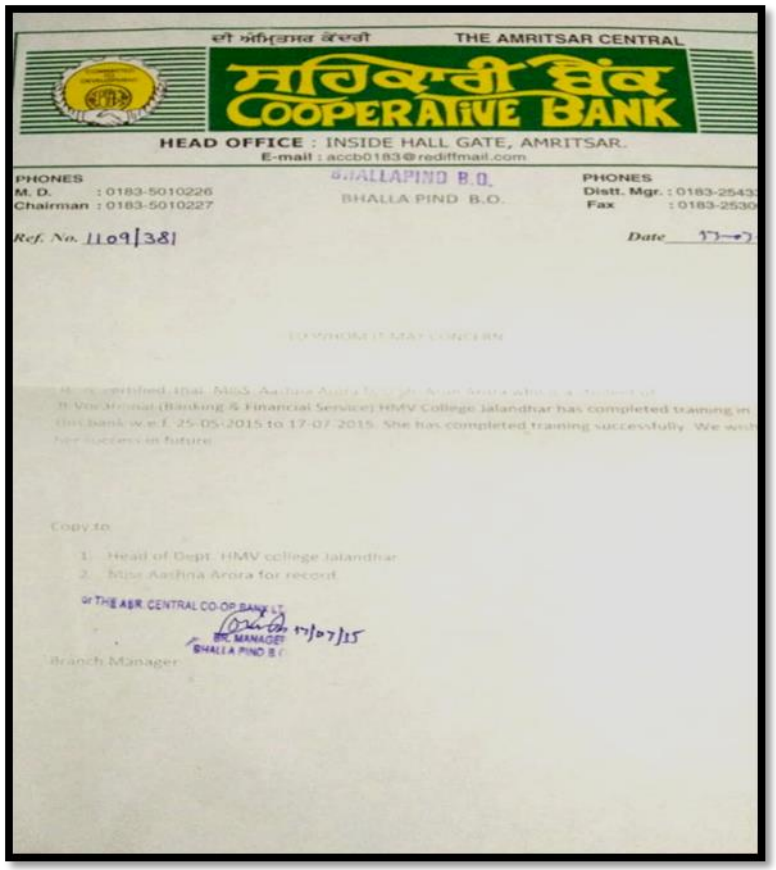
TO WHOM IT MAY CONCERN

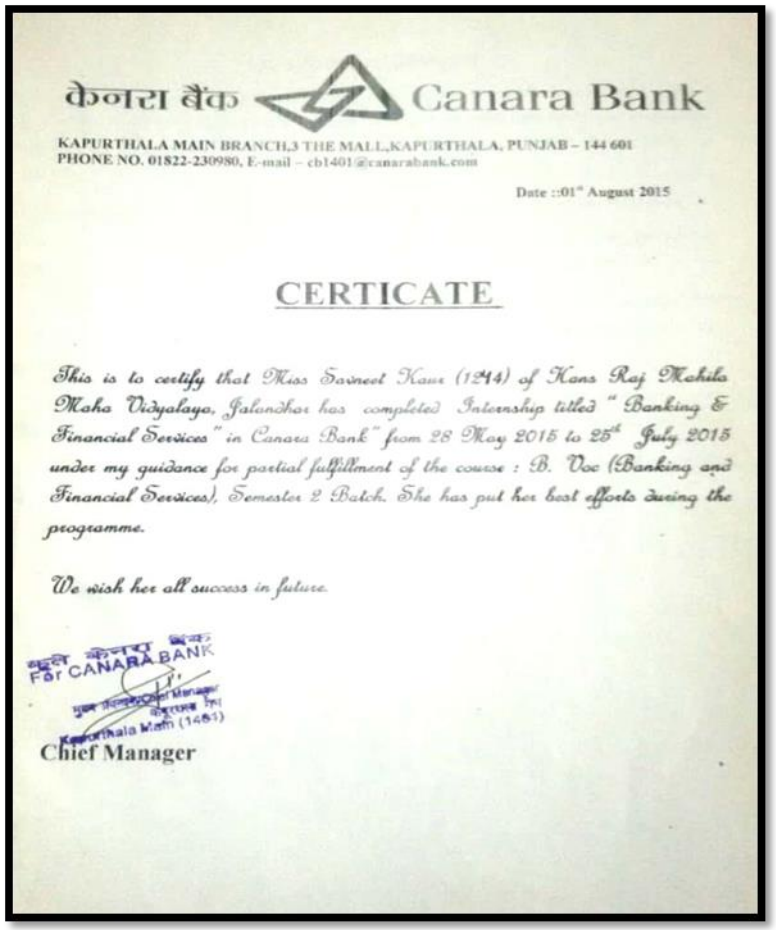
THIS IS TO CERTIFY THAT RAMANDEEP KAUR D/O SH. JASVIR SINGH STUDENT OF B.Sc. FASHION DESIGNING , 4th SEMESTER HAVING ROLL NO.6634, IN HANS RAJ MAHILA MAHA VIDYALYA, JALLANDHAR HAS COMPLETED HER TRAINING OF ONE MONTH i.e. FROM 17TH MAY, 2015 TO 16TH JUNE, 2015

SHE SEEMS TO BE A VERY INTELLIGENT AND HARD WORKING STUDENT AND WE WISH HER BEST OF LUCK FOR HER FUTURE PROSPECTUS.

For Shree Ganpati Synthetics Pvt. Ltd.

Director

3	Cooperative Bank, Bhalla Pind, Amritsar.	2014-15	Student Internship	

4	Canara Bank, Kapurthala	2014-15	Student Internship	

केनरा बैंक Canara Bank

KAPURTHALA MAIN BRANCH,3 THE MALL,KAPURTHALA, PUNJAB – 144 601
PHONE NO. 01822-230980, E-mail – cb1401@canarabank.com

Date ::01st August 2015

CERTICATE

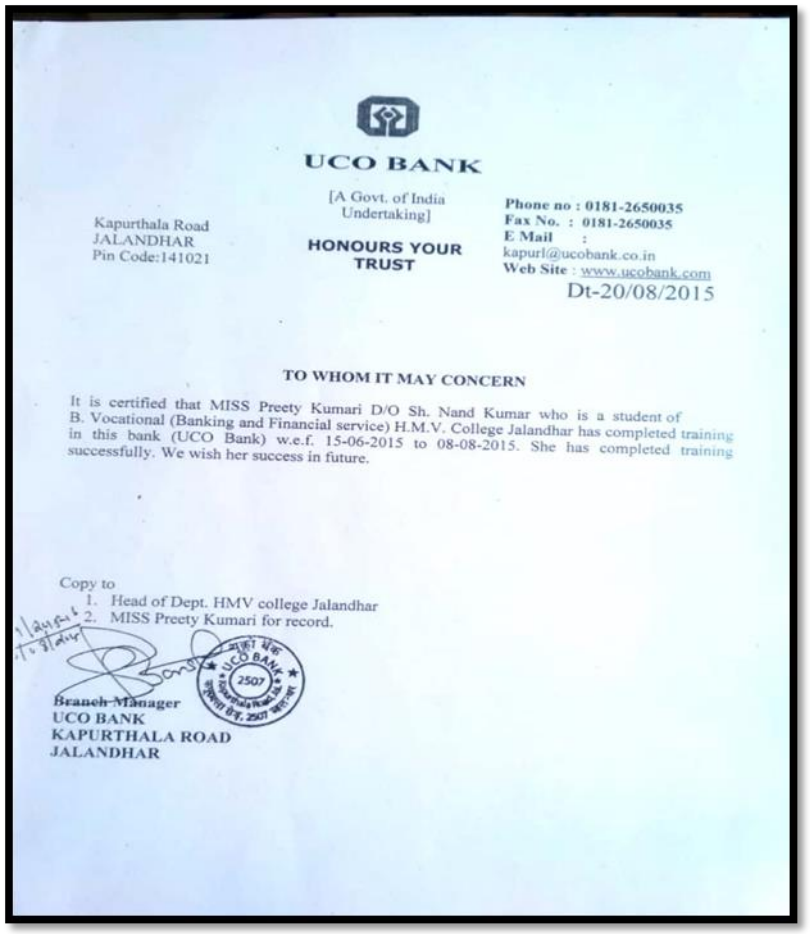
This is to certify that Miss Savneet Kaur (1244) of Hans Raj Mahila Maha Vidyalaya, Jalandhar has completed Internship titled "Banking & Financial Services" in Canara Bank" from 28 May 2015 to 25th July 2015 under my guidance for partial fulfillment of the course : B. Voc (Banking and Financial Services), Semester 2 Batch. She has put her best efforts during the programme.

We wish her all success in future.

For CANARA BANK

Kapurthala Main (1401)

Chief Manager

5	UCO Bank, Kapurthala Road, Jalandhar	2014-15	Student Internship	

UCO BANK

[A Govt. of India Undertaking]

Kapurthala Road
JALANDHAR
Pin Code:141021

HONOURS YOUR TRUST

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Fax No. : 0181-2650035
E Mail :
kapurl@ucobank.co.in
Web Site : www.ucobank.com

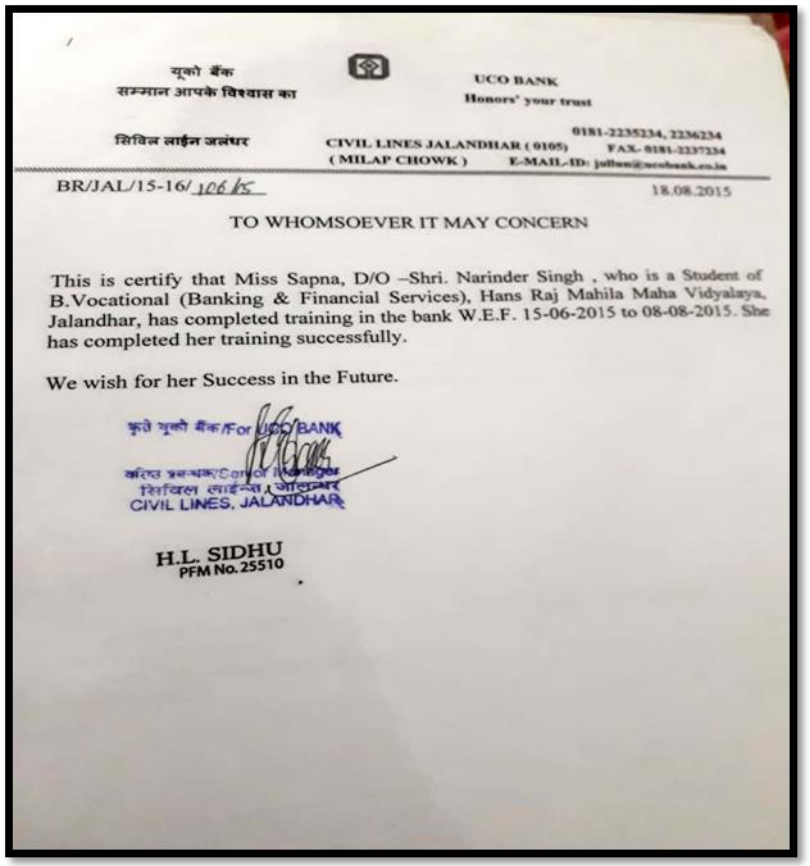
Dt-20/08/2015

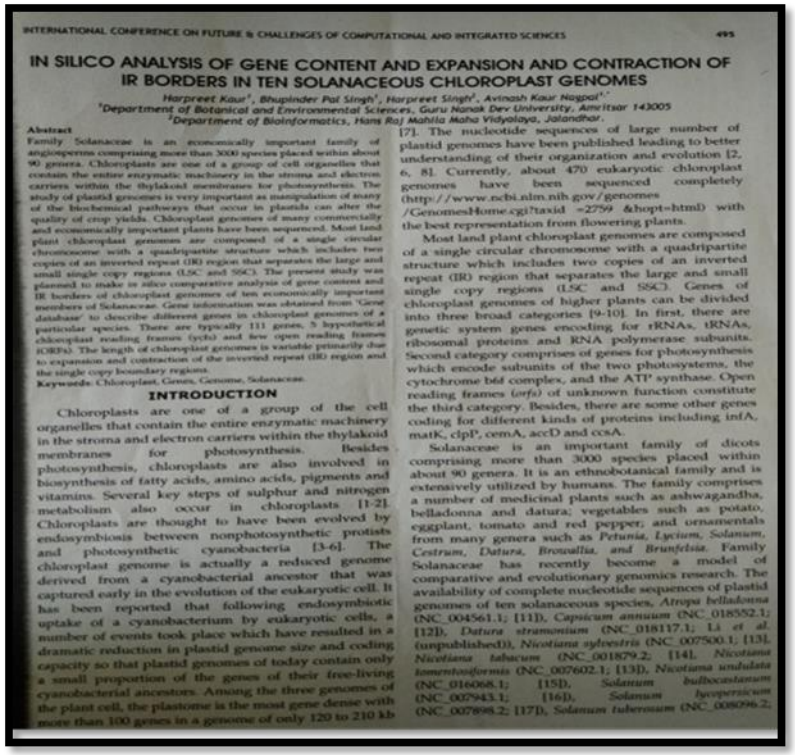
TO WHOM IT MAY CONCERN

It is certified that MISS Preety Kumari D/O Sh. Nand Kumar who is a student of B. Vocational (Banking and Financial service) H.M.V. College Jalandhar has completed training in this bank (UCO Bank) w.e.f. 15-06-2015 to 08-08-2015. She has completed training successfully. We wish her success in future.

Copy to
1. Head of Dept. HMV college Jalandhar
2. MISS Preety Kumari for record.

Branch Manager
UCO BANK
KAPURTHALA ROAD
JALANDHAR

6	UCO Bank, Civil Lines, Jalandhar	2014-15	Student Internship	

7	Department of Botanical & Environment Sciences, GNDU, Amritsar.	2014-15	Capacity Building Activity (Research Paper)	

IN SILICO ANALYSIS OF GENE CONTENT AND EXPANSION AND CONTRACTION OF IR BORDERS IN TEN SOLANACEOUS CHLOROPLAST GENOMES

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Abstract
Family Solanaceae is an economically important family of angiosperms comprising more than 3000 species placed within about 90 genera. Chloroplasts are one of a group of cell organelles that contain the entire enzymatic machinery in the stroma and electron carriers within the thylakoid membranes for photosynthesis. The study of plastid genomes is very important as manipulation of many of the biochemical pathways that occur in plastids can alter the quality of crop yields. Chloroplast genomes of many commercially and economically important plants have been sequenced. Most land plant chloroplast genomes are composed of a single circular chromosome with a quadripartite structure which includes two copies of an inverted repeat (IR) region that separates the large and small single copy regions (LSC and SSC). The present study was planned to make in silico comparative analysis of gene content and IR borders of chloroplast genomes of ten economically important members of Solanaceae. Gene information was obtained from 'Gene database' to describe different genes in chloroplast genomes of a particular species. There are typically 111 genes, 5 hypothetical chloroplast reading frames (ycfs) and few open reading frames (ORFs). The length of chloroplast genomes is variable primarily due to expansion and contraction of the inverted repeat (IR) region and the single copy boundary regions.
Keywords: Chloroplast, Genes, Genome, Solanaceae.

INTRODUCTION

Chloroplasts are one of a group of the cell organelles that contain the entire enzymatic machinery in the stroma and electron carriers within the thylakoid membranes for photosynthesis. Besides photosynthesis, chloroplasts are also involved in biosynthesis of fatty acids, amino acids, pigments and vitamins. Several key steps of sulphur and nitrogen metabolism also occur in chloroplasts [1-2]. Chloroplasts are thought to have been evolved by endosymbiosis between nonphotosynthetic protists and photosynthetic cyanobacteria [3-6]. The chloroplast genome is actually a reduced genome derived from a cyanobacterial ancestor that was captured early in the evolution of the eukaryotic cell. It has been reported that following endosymbiotic uptake of a cyanobacterium by eukaryotic cells, a number of events took place which have resulted in a dramatic reduction in plastid genome size and coding capacity so that plastid genomes of today contain only a small proportion of the genes of their free-living cyanobacterial ancestors. Among the three genomes of the plant cell, the plastome is the most gene dense with more than 100 genes in a genome of only 120 to 210 kb [7]. The nucleotide sequences of large number of plastid genomes have been published leading to better understanding of their organization and evolution [2, 6, 8]. Currently, about 470 eukaryotic chloroplast genomes have been sequenced completely (http://www.ncbi.nlm.nih.gov/genomes/GenomesHome.cgi?taxid=2759&hopt=html) with the best representation from flowering plants.

Most land plant chloroplast genomes are composed of a single circular chromosome with a quadripartite structure which includes two copies of an inverted repeat (IR) region that separates the large and small single copy regions (LSC and SSC). Genes of chloroplast genomes of higher plants can be divided into three broad categories [9-10]. In first, there are genetic system genes encoding for rRNAs, tRNAs, ribosomal proteins and RNA polymerase subunits. Second category comprises of genes for photosynthesis which encode subunits of the two photosystems, the cytochrome b6f complex, and the ATP synthase. Open reading frames (*orfs*) of unknown function constitute the third category. Besides, there are some other genes coding for different kinds of proteins including infA, matK, clpP, cemA, accD and ccsA.

Solanaceae is an important family of dicots comprising more than 3000 species placed within about 90 genera. It is an ethnobotanical family and is extensively utilized by humans. The family comprises a number of medicinal plants such as ashwagandha, belladonna and datura; vegetables such as potato, eggplant, tomato and red pepper; and ornamentals from many genera such as *Petunia, Lycium, Solanum, Cestrum, Datura, Browallia, and Brunfelsia*. Family Solanaceae has recently become a model of comparative and evolutionary genomics research. The availability of complete nucleotide sequences of plastid genomes of ten solanaceous species, *Atropa belladonna* (NC_004561.1; [11]), *Capsicum annuum* (NC_018552.1; [12]), *Datura stramonium* (NC_018117.1; Li *et al.* (unpublished)), *Nicotiana sylvestris* (NC_007500.1; [13]), *Nicotiana tabacum* (NC_001879.2; [14]), *Nicotiana tomentosiformis* (NC_007602.1; [13]), *Nicotiana undulata* (NC_016068.1; [15]), *Solanum bulbocastanum* (NC_007943.1; [16]), *Solanum lycopersicum* (NC_007898.2; [17]), *Solanum tuberosum* (NC_008096.2;