



## Welcome to the Human Genetics Research Centre

The Human Genetics Research Centre is a Department of Science and Technology-Fund for Improvement of Science & Technology Infrastructure (DST-FIST) supported facility centre to do research in both clinical and basic science at SBDCH. It has the dual challenge of promoting excellence in research in molecular genetics and also a similar challenge for excellence in professional training in genetics in oral health and dentistry. The lab has started functioning in the year 2010 and since its inception, Dr. Arvind Ramanathan (a clinician-scientist with doctorate from Tokyo Medical and Dental University, Japan) was the Principal Investigator until 2018. The focus of our research centre is on the identification of genetic polymorphisms and /or mutation(s) in the Indian patients with oral and dental diseases and disorders and screening of plasmids of oral microbes. The research centre supported by the Department of science and technology-'College as a whole', enables to do the molecular research work which includes Microbial Genetics to Human Genetics and genomics as applied to human diseases.

## Research Head and Team Members

1. **Dr Usha Subbiah**, Professor and Head
2. **Harini Venkata Subbiah**, Senior Research Fellow
3. **Athira Ajith**, Senior Research Fellow
4. **Debarshi Roy**, Research Associate

## Staff Profiles

### **Dr. Usha Subbiah MSc, PhD.**

Professor and Head  
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Phone: +91-  
8248707203



DOJ: Feb 19, 2016

**Dr. Usha Subbiah** holds a doctoral degree in Genetics in 2006 from Dr ALM PG Institute of Basic Medical Sciences, University of Madras, Chennai, India. She received her postgraduate in Zoology from University of Madras and undergraduate in Zoology from Bharathidasan University. She gained more than 4 years of postdoctoral research experience in gene cloning and mutant gene library creation in Orchid Chemical & Pharmaceuticals Ltd, Chennai, India; University of Delaware, USA and in University Of Malaya, Malaysia, and worked as an Assistant Professor in Department of Biotechnology in Prathyusha Institute of Technology and Management, Chennai.

She then joined SBDCH as an Assistant Professor in 2016 at Human Genetics Research Centre. Since 2018, she has been heading the research centre and Principal Investigator for DST-FIST programme to expand the research of college. Her research interest includes the studies on the association of genetic polymorphism and gene expression analysis of oral and dental diseases and disorders, oral microbial plasmid identification to combat microbial resistance with special

focus on periodontitis. Additional researches were done on oxidative stress and antioxidants in oral diseases.

**Area of Research Expertise:** Molecular Genetics, Microbial Genetics, Drug-Nucleic Acid Interactions.

**Publications Chart with Points:**

S. No	Publications	Credit points
1	Harini Venkata Subbiah, Usha Subbiah, Athira Ajith, Association of $\beta$ -defensin 1 gene polymorphism and dental caries susceptibility in tamil ethnicity, Research Journal of Pharmacy and Technology, 2021, 14, 9. (Scopus indexed)	15
2	Harini Venkata Subbiah, Polani Ramesh Babu, Usha Subbiah, In silico analysis of non-synonymous single nucleotide polymorphisms of human DEFB1 gene, Egyptian Journal of Medical Human Genetics (2020) 21:66, 1-9 (Scopus indexed)	15
3	Subbiah Usha, Elango Sonaa, Roy Debarshi. An Insight Of DNA Repair Gene Polymorphism In Oral Premalignant Disorders Associated With Habitual Risk Factors. European Journal of Molecular & Clinical Medicine. 2020 Dec 14;7(5):1340-54 (Scopus indexed).	10
4	Harini Venkata Subbiah, Usha Subbiah, Athira Ajith, Ramesh Babu Polani. Single Nucleotide Polymorphism of Salivary Antimicrobial Peptides in Periodontitis. Indian Journal of Public Health Research and Development, Accepted for publication, 2020, 7 (5):1354-1363 (Scopus Indexed).	15
5	Usha S, Gokulalakshmi E, Sonaa E, Arvind R, Bagavad G, Karthikeyan S, Effect of Chitosan, Chitosan Nanoparticle, Anacyclus pyrethrum and Cyperus rotundus in combating Plasmid Mediated Resistance in Periodontitis. Anti-Infective Agents, 2020, (18), 43-53 (Scopus Indexed).	15
6	Usha Subbiah, Harini Venkata Subbiah, Athira Ajith, Sonaa Elango. Salivary Secretory Proteins-Unveiling Genetic Polymorphism and Diseases. Indian Journal of Public Health Research and Development, 2019, 10(11), 2822-2825 (Scopus Indexed).	10
7	Harini Venkata Subbiah, Usha Subbiah, Athira Ajith, Ramesh	10

	Babu Polani. Role of Neutrophils in Periodontitis: A Review. Indian Journal of Public Health Research & Development. 2019 Dec 1;10(12) (Scopus Indexed).	
8	Angeline Julius, Usha Subbiah, Sonaa Elango Designing Universal Primer for the Identification of Erythromycin and Tetracycline Resistance Genes in Oral Streptococci Indian Journal of Public Health Research and Development 10(11):2838, 2019 (Scopus Indexed).	15
9	Athira Ajith, Usha Subbiah, Harini Venkata Subbiah. Genetic Analysis In Pain Associated Deep Caries. Indian Journal of Public Health Research and Development, 2019 10(11), 2829-2833 (Scopus Indexed).	10
10	Athira Ajith, Usha Subbiah, Harini Venkata Subbiah. Role of Genetics in Dentistry. Indian Journal of Public Health Research and Development, 2019,10(12):965-969 (Scopus Indexed).	10
11	S. Karthika Nagarajan, Usha Subbiah, Human Papilloma Virus Infection Status and Oral Cancer incidence in South India – lack of evidence and its current impacts. Indian Journal of Public Health Research and Development, 2019 (Scopus Indexed).	5
12	Elango S, Balcos MC, Subbiah U, Jeong J, Wanwyk R, Enhanced Oxidizability Of Lipoproteins In Radiation Treated Oral Cancer Cases, Interfered By Antioxidant Selenium. Journal of Interdisciplinary Biosciences. (2018) 2(2): 1-11. (International Scientific Indexed)	
13	Sonaa Elango, Shila Samuel, Zenith Khashim, Usha Subbiah, Selenium influences trace elements homeostasis, cancer biomarkers in squamous cell carcinoma patients administered with cancerocidal radiotherapy. Asia Pacific Journal of Cancer Prevention(2018) 19: 253- 260.(Pubmed, Scopus Indexed)	5
14	Usha Subbiah, Gokulalakshmi Elayaperumal and Sonaa Elango, Plasmid mediated antibiotic resistance in E. coli isolated from chronic periodontitis. European Journal of Biomedical and Pharmaceutical sciences (2017) 4(6) (Index Copernicus)	
15	Usha Subbiah, Gokulalakshmi Elayaperumal, Arvind Ramanathan & Sonaa Elango, Horizontal gene transfer in plasmid: Are we close to eliminating periodontal pathogens?. International	

	Journal of Bio-Technology and Research (2017) 7(3): 17-28. (Scopus Indexed).	
16	Sonaa Elango, Usha Subbiah, Radiosensitization effect of Selenium on the;Warburg effect, Metabolism of hypoxic Oral Squamous cell Carcinoma. AmericanJournal of Pharma Tech Research; 2016; 6(5): 2 249-3387(Google Scholar, Cite factor).	
17	Sonaa Elango, Zenith Kasim, Shila Samuel, Usha Subbiah, Marie Carmel Balcos, Modulation of macro molecular damages and membrane structural integrity by Selenium in Radiation treated human stage (III) oral cancer cases;, International Journal of Current Research in Medical Sciences (2016). 2(9): 8-21. (Google scholar)	
18	Sonaa E, Ja In J, Usha S. The differential behaviour of Selenium analogs on anticancer drug induced apoptotic lymphocytes of human peripheral blood. Asia Pacific Journal of Cancer Prevention; 2016;17 (5), 2527-2533. (Pubmed, Scopus Indexed)	5
19	Sonaa E, Usha S. Influence of selenium on radiogenic collagen destruction and the degree of collagen tissue maturation in stage III oral squamous cell carcinoma patients undergoing therapeutic irradiation. Journal of Cancer Research and Therapeutics; 2015; Jan-Mar; 11(1):181-190. (Scopus Indexed).	7.5
20	Sonaa E, Usha S, Ja In J. Interaction of Mineral with plant: An ex vivo study of Selenium, Genistein on the morphological and nuclear changes in anticancer drug induced apoptotic human peripheral blood lymphocytes. Biofactors;2013;May-June;39(3):279-93. (Pubmed, Scopus Indexing)	7.5
21	Johnson Irudayam Maria; Kesavan Chandrasekhar; Usha Subbiah; Malathi Raghunathan. Analysis of group I intron splicing in the presence of naturally occurring methylxanthines. Clinica Chimica Acta; International journal of clinical chemistry 2009;400(1-2):74-76. (Pubmed, Scopus Indexing)	5
22	Usha Subbiah, and Malathi Raghunathan. Chemoprotective action of Resveratrol and Genistein from cisplatin and mitomycin C induced apoptosis in human peripheral blood lymphocytes. Journal of Biomolecular Structure and Dynamics2008; 25(4): 425-434. (Pubmed, Scopus Indexing)	15

23	S.Usha, I.Maria Johnson, R.Malathi, Protective action of theophylline on cisplatin and mitomycin C induced apoptosis in human peripheral blood lymphocytes, Journal of Biomolecular Structure and Dynamics2007; 24(6): 683. (Pubmed, Scopus Indexing)	15
24	Usha Subbiah, Maria Johnson Irudayam, Malathi Raghunathan. Possible Inhibition of Group I Intron RNA by Resveratrol and Genistein. Journal of Biomolecular Structure and Dynamics2006; 24:1-8.(Pubmed, Scopus Indexing)	15
25	Subbiah Usha, Irudayam Maria Johnson, Raghunathan Malathi. Modulation of DNA intercalation by Resveratrol and Genistein. Molecular and Cellular Biochemistry 2006; 284(1-2): 57-64. (Pubmed, Scopus Indexing)	15
26	Usha S, Maria Johnson I, Malathi R. Interaction of resveratrol and genistein with nucleic acids. Journal of Biochemistry and Molecular Biology 2005; 38: 198-205. (Pubmed, Scopus Indexing).	15
<b>International Book Chapters (Elsevier):</b>		
1	Usha Subbiah, Sonaa Elango, Raghavendra Jayesh, Herbals and green synthesized nanoparticles in dentistry, chapter 25, Elsevier Publication, Nanobiomaterials in Clinical Dentistry, 2019.	10
2	Karthikeyan Subramani, Abdelbary Elhissi, Usha Subbiah, Waqar Ahmed, chapter 1: Introduction to Nanotechnology Elsevier Publication, Nanobiomaterials in Clinical Dentistry, 2019.	5
3	Karthikeyan Subramani, Usha Subbiah and Sarandeep Huja, Nanotechnology in orthodontics—1: The past, present, and a perspective of the future, chapter 11,Elsevier 2019.	5
		255

## Harini Venkata Subbiah, M. Tech

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**Harini** has joined in June 2019 as a researcher and pursuing her research on single nucleotide polymorphism in Periodontitis in Human Genetics Research Centre. She is also a part time PhD scholar in Bharath Institute of Higher Education & Research. She has completed M.Tech Biotechnology from Dr. M.G.R Educational and Research Institute, University, Chennai and B.Tech Biotechnology from Alagappa College of Technology, Anna University (2009). She has also done Post Graduate Diploma in Biomedical Science, University of Auckland, New Zealand (2011) and qualified GATE in 2016 with 99.4 percentile holding all India rank 57. She gained her research experience in gene expression of various enzymes involved in the metabolism of ceramide from Department of Biochemistry and Cell Biology, Vision Research Foundation, Sankara Nethralaya, Chennai, India. She was working as a Language Editor in Scientific Publishing Services, Chennai where she edited STM (Science, Technology and Medicine) journals according to journal specific style and language requirements.

**Area of Research Expertise:** Molecular Genetics, Molecular biology

### Publications Chart with Points:

S. No	Publications	Credit points
1	<b>Harini Venkata Subbiah</b> , Usha Subbiah, Athira Ajith Association of $\beta$ -defensin 1 gene polymorphism and dental caries susceptibility in tamil ethnicity. Research Journal of Pharmacy and Technology. Year: 2021, Vol: 14, Issue: 9.	15
2	<b>Harini Venkata Subbiah</b> , Polani Ramesh Babu, Usha Subbiah, In silico analysis of non- synonymous single nucleotide polymorphisms of human DEFB1 gene, Egyptian Journal of Medical Human Genetics (2020) 21:66,1-9 (Scopus indexed)	15
3	<b>Harini Venkata Subbiah</b> , Polani Ramesh Babu, and Usha	10

	Subbiah. Single Nucleotide Polymorphisms of Salivary Antimicrobial Peptides in Periodontitis. European Journal of Molecular & Clinical Medicine, 2020, Volume 7, Issue 5, Pages 1354-1363.	
4	<b>Harini Venkata Subbiah</b> , Usha Subbiah, Athira Ajith, and Ramesh Babu Polani. Role of Neutrophils in Periodontitis: A Review; Indian Journal of Public Health Research & Development 10, no. 12 (2019): 956-961.	10
5	Subbiah Usha, <b>Harini Venkata Subbiah</b> , Athira Ajith, and Sonaa Elango.;Salivary Secretory Proteins-Unveiling Genetic Polymorphism and Diseases." Indian Journal of Public Health Research & Development 10, no. 11 (2019).	5
6	<b>Harini V</b> , Vijayalakshmi M, Sivaraj C, Arumugam P. Antioxidant and Anticancer Activities of Methanol Extract of Melochia corchorifolia L. Int. J of Sci. and Res. 2017; 6(1):1310-1316.	-
		<b>55</b>



## Athira Ajith, M.Sc

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**Athira** has joined as a researcher in June 2019. She has been analysing the genetic variants in oral infections. She is also a part time PhD scholar in Human Genetics Research Centre, SBDCH, Bharath Institute of Higher Education & Research. She gained her M.Sc in Biotechnology from Bharathiar University and undergraduate in Biotechnology from University of Calicut. During her graduation, she gained her research experience in gene cloning techniques.

**Area of Research Expertise:** Molecular Biology, Microbial Genetics

### Publications Chart with Points:

S. No	Publications	Credit points
1	Harini Venkata Subbiah, Usha Subbiah, <b>Athira Ajith</b> . Association of $\beta$ -defensin 1 gene polymorphism and dental caries susceptibility in tamil ethnicity. Research Journal of Pharmacy and Technology. Year: 2021, Vol: 14, Issue: 9.	5
2	<b>Athira Ajith</b> , Usha Subbiah, Harini Venkata Subbiah. Genetic Analysis In Pain Associated Deep Caries. Indian Journal of Public Health Research and Development, 2019 10(11), 2829-2833 (Scopus Indexed).	10
3	Usha Subbiah, Harini Venkata Subbiah, <b>Athira Ajith</b> , SonaaElango. Salivary Secretory Proteins-Unveiling Genetic Polymorphism and Diseases. Indian Journal of Public Health Research and Development, Nov 2019	5
4	<b>Athira Ajith</b> , Usha Subbiah, Harini Venkata Subbiah. Role of Genetics in Dentistry: A Review. Indian Journal of Public Health Research & Development, 2019 10(12), 965-969.	10
5	Harini Venkata Subbiah, Usha Subbiah, <b>Athira Ajith</b> , and Ramesh Babu Polani. Role of Neutrophils in Periodontitis: A	5

	Review; Indian Journal of Public Health Research & Development 10, no. 12 (2019): 956-961.	
		<b>35</b>

## Debarshi Roy, M.Sc

Research Associate  
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Phone: 91- 7908881939



**Debarshi Roy**, has joined as Research Associate in January 2019 and also a part time PhD scholar in Human Genetics Research Centre, SBDCH, Bharath Institute of Higher Education & Research. He has 3 years of research experience in Molecular cytogenetics. He was working as Junior Research Officer in the Department of Cytogenetics, in DNA Life Sciences Pvt. LTD, Bhubaneswar, Odisha. India. He is familiar in karyotyping and DNA damage Assays and currently identifying oral cancer expression profile.

**Area of Research Expertise:** Cytogenetics, Molecular Genetics

### Publications Chart with Points:

S. No	Publications	Credit points
1	Subbiah Usha, Elango Sonaa, <b>Roy Debarshi</b> . An Insight Of DNA Repair Gene Polymorphism In Oral Premalignant Disorders Associated With Habitual Risk Factors. European Journal of Molecular & Clinical Medicine. 2020 Dec 14;7(5):1340-54.	5
2	Chakraborty A, Panda SK, Mohakud NK, <b>Roy D</b> , Padhi S, Koh SW, Hande MP, Banerjee B. A child with partial trisomy 4 (q26–qterminal) resulting from paternally inherited translocation (4: 18) associated with multiple congenital anomalies and death. Genome integrity. 2019;10	5
		<b>10</b>

## Vision

Human Genetics Research Centre offers a diverse range of research in genetics bound by the common thread of biomedical application. As part of the Human genetics unit, researchers work amongst the very best scientists to produce original and distinctive globally leading research in oral and dental disease. The research areas fall into the categories from Microbial genetics to Human genetics including the genetics of microbial pathogens of human, rare syndrome and mutation biology, cancer genetics, and the most recent genomics approaches related to dentistry.

## Mission

Human Genetics Research Centre is dedicated to build an exciting, productive and collaborating environment for research related to clinical application in human genetics. We aim to continue supporting students and teaching staff in the planning and organization of their research projects, improving the quality and quantity of research applications and scientific publications, developing interdisciplinary focal points of genetic research and offers degrees at PhD level. A broad-based curriculum and research opportunities in basic, applied, or clinical genetics helps the students and scholars to gain knowledge in all aspects of human genetics.

- To create a robust molecular screening centre for oral disease and disorders
- To promote research and education focused on the medical and scientific significance of variation in the human and bacterial genome.
- To determine the predisposing genetic factors could help the clinician to choose the most reasonable approach to prevent and control the disease condition in patients with high susceptibility to various diseases.
- To establish collaborations with non-government organizations (NGOs) to reach the rural public and understand the genetic expression prevalence of various diseases.
- To develop diagnostic kits for early diagnosis of genetic diseases.

## Research Facilities

**Human Genetics Research Centre (DST-FIST) Sponsored facility includes Molecular Genetics Laboratory and Microbial Genetics Laboratory.** The Centre is fully equipped to enable all the clinicians and student researchers to pursue a real-time research.



## Molecular Genetics Laboratory







## Microbial Genetics Laboratory



## EQUIPMENTS

### DST-FIST SPONSORED EQUIPMENTS

(Year of Purchase - Dec 2018 and Jan 2019)

S.No	Equipment Name with Model & Make
1	<b>Real-Time PCR</b> Model:9001650 Make: Rotor-GeneQ
2	<b>Nano Fluorometer</b> Model:E6150 Make: Promega
3	<b>Spectrophotometer</b> Model: 4010110100 Make:DLAB Scientific
4	<b>Gradient PCR</b> Model:4375786 Make: Thermo fisher Scientific
5	<b>Thermo Cooling centrifuge</b> Model: C24 PLUS Make:Remi
6	<b>Deep freezer (-20C)</b> Model: BFS345S Make:Vestfrost
7	<b>Laminar UV Hood</b> Model: VM1200-SS Make:General Instruments
8	<b>Electronic Balance</b> Model: AUW220D Make:Shimadzu
9	<b>Trinocular microscope</b> Model: CX2li-WC Make:Lawrence and Mayo
10	<b>Refrigerator</b> Model: RLR-400 Make:Remi
11	<b>Eporator</b> Model: 4309000019 Make:Eppendorf
12	<b>Gel documentation system</b> Model:Gelstain 4X Make:Mediccare
13	<b>Agarose Gel Electrophoresis unit</b> Model: EPSV0004 & MX1200-(01,12), MX1201-01, MX1205-(01,02,13), MX-1251-01,MX1245,1290-01 Make: EPS&Medox
14	<b>Pipettes</b> Model: SI-2-1000 &170101 to170107 Make: Rainin&Plastx
15	<b>Laboratory centrifuge</b> Model: R-8C BL Make:Remi
16	<b>Refrigerated orbital incubator</b> Model:Orbitek-LE(LE-D) Make: Scigenics



17	<b>Microbial Incubator</b> Model: 7251-150 Make: Equitron
18	<b>Ice flaker</b> Model: LMIF-30 Make: Labman
19	<b>Elisa plate reader</b> Model:iMark Micro Plate Reader Make: Biorad

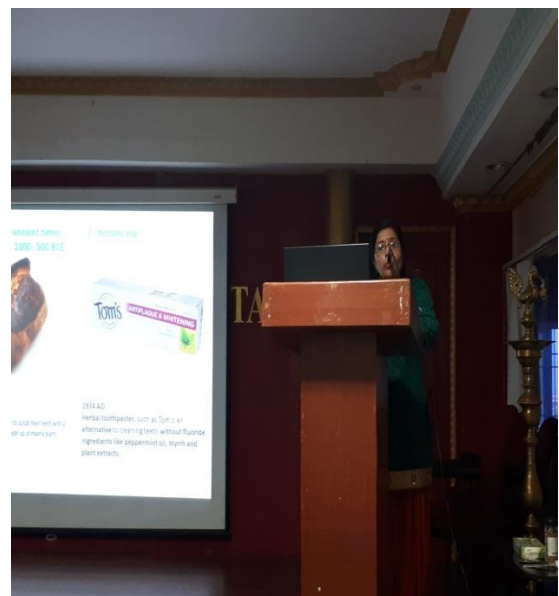
**SBDCH Funded equipment's**

<b>Generic Name of Equipment</b>	<b>Model</b>	<b>Year of purchase</b>
Spectrophotometer	SL-210, Elico	2011
Mastercycler	Eppendorf	2011
Gel Documentation System with UV transilluminator	Medicare	2011
Centrifuge R-5148 (Non-cooler)	Eppendorf	2016
Centrifuge (Non-cooler)	Remi	2011
Vortex mixer	Spinix	2010
Heating block	Rivotek	2010
Agarose Gel Apparatus	Medox	2011
Vertical slab gel electrophoresis	Medox	
Microfuge (Table Top)	Tarson	2010
pH meter	Medox	2011
Weighing balance	Kern	2011
Magnetic stirrer	Remi	2010
Microwave Oven	Samsung	2011
Inverter Tubular Battery	Exide	2016
Pipettes Adjustable	Eppendorf and Aquapet	
Gel Rocker	Heidolph Titramax 100	2011
Refrigerator	Godrej	2011

## Activities

### Invited Talk (International)

**“Bamboo salt mediates protection against cytogenetic damages”**. Human Genetics Research Centre, Sree Balaji Dental college and Hospital, Bharath University, Chennai, India, Jan 16 2019.



**Training programme conducted for University of Madras and Ethiraj College for Women students on “Techniques in Molecular Genetics” from 31/05/2019 to 14/06/2019 by Human Genetics Laboratory, SBDCH**



**Training programme conducted for B.Tech Genetic Engineering students, BIHER on “Basic Techniques in Molecular Biology” from 17/06/2019 to 26/06/2019 by Human Genetics Laboratory, SBDCH**



**Training programme conducted for MDS Endodontics and Pedodontics on “Basic Techniques in Molecular biology” from 17/12/2020 to 18/12/2020 by Human Genetics Research Centre, SBDCH**





## Research Projects

No	Name of funding agency	File number	Name of the principal investigator	Amount (Rs in Lakhs)	Status Ongoing/completed)
1	DST-FIST (Funds for science and technology infrastructure)	SR/FST/College-2017/23 (C)	Dr. Usha Subbiah	45	Ongoing

## Ongoing Projects

1. Analysis of genetic polymorphism in dental caries susceptibility genes.
2. Gene expression in periodontitis associated with type 2 diabetes mellitus.
3. Salivary peptides polymorphism in periodontitis associated with type 2 diabetes mellitus in south Indian population.
4. Gene expression analysis in oral infections.
5. Qualitative and quantitative assessment of HPV status to identify high risk individuals for potential to develop oral and oro-pharyngeal squamous cell carcinoma

## Completed Projects (2016-2019)

1. Gene polymorphism in dental caries
2. Effect of chitosan and chitosan nanoparticle, *Anacyclus pyrethrum* and *cyperus rotundus* in combating plasmid mediated resistance in periodontitis
3. Molecular identification of 16s rRNA of chronic periodontal pathogens
4. Effect of *cyperus rotundus* in combating plasmid mediated resistance in periodontitis
5. Dissemination of *Enterococcus faecalis* plasmid in combatting antibiotic resistance in chronic periodontitis
6. Analysis of 16s rRNA of *Ralstonia pickettii* and *Bacillus safensis* of chronic periodontitis
7. Plasmid mediated antibiotic resistance in *E. coli* isolated from chronic periodontitis
8. Bacterial prevalence in edentulous patients
9. 16s rRNA gene-based metagenomic analysis identifies a novel bacterial co-prevalence pattern in dental caries.
10. A novel mutation in ROGDI gene is associated with kohl-shutter tonz syndrome.

## Research Output and Impact on society

### **Genetic Investigation of patients with periodontitis and endodontic infections.**

- Some syndromes are associated with gingival enlargement, gingival bleeding, gingival fibromatosis, periodontitis, alveolar bone loss, and tooth loss. Hence investigating the association between periodontitis and polymorphic site on gene expands the knowledge for the future development in diagnostic markers for assessment of risk for periodontal and caries disease.
- A predictive test for dental caries or for periodontal disease does not currently exist. Since these are both complex diseases with multiple genetic and environmental risk factors, quantifying risk will require multifaceted assessment including genetic variant analysis in diseased population.
- Genetic information about an individual's risk profile may change how disease is managed. Identifying the genetic polymorphism, mutations in the risk allele and their role in periodontal disease and caries will provide the likelihood of disease initiation before it occur.
- Genetic counseling will help to draw a pedigree chart which can help to establish the mode of inheritance in family of patient. Once the mode of inheritance is established, we can predict the susceptible member for the disease and thus treatment can be started.

### **Genetic Investigation in oral cancer**

- Identification of gene expression in oral cancer insight into how to therapeutically navigate and target with precision the molecular networks and genetic mutations that drive neoplastic development and progression.
- If genetic risks could be identified prior to the occurrence of premalignant disorders and caries lesions, minimal treatment cost could be used as well as alleviate the patient's pain and suffering from oral disorders.

- Besides this, the environmental and behavioural factors which influence the risk of oral cancer and the community should be made aware of the importance of good alternative oral hygiene behaviours and daily habits.

### **Bacterial Genetic element Screening of patients with oral diseases**

- Screening for plasmid in oral pathogens towards susceptibility which helps in understanding the chain of transmission of oral bacterial resistance and facilitate the development of the alternative antimicrobial administration besides the administration of available higher generation of antibiotics to patients in the dental practice.
- This allows a family dentist to offer effective preventive and alternative treatment strategies for oral diseases.

## **Collaborators**

### **1. Dr. E. A. Sonaa, MSC., DCPIC., PhD**

Professor, Department of Life Sciences  
School of Natural Sciences,  
University of Suwon Wau-ri, Bongdam-eup,  
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### **2. Dr. V. Vettriselvi, Msc, PhD**

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### 3. Dr. Karthikeyan Subramani, BDS, MSC, MS

Associate Professor of Dental Medicine and Research Head

Henderson Orthodontic Department

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Medicine, Henderson 89014,

Nevada, Henderson, Nevada, USA

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Phone: +1- 859 797 1633

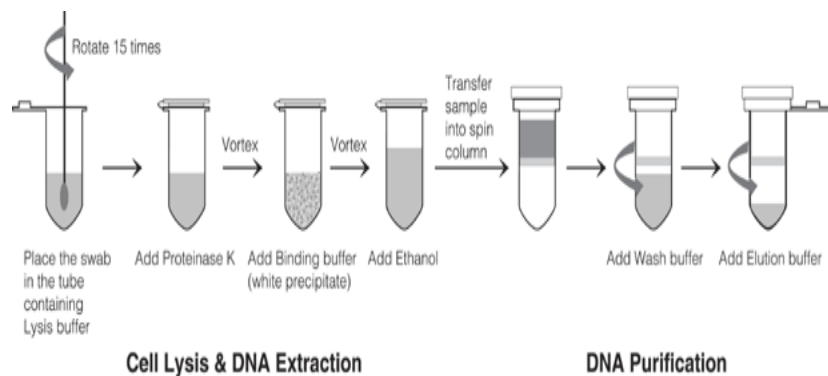
## Resources and Services

Here you will find a list of resources which includes information on each service offered by the Human Genetics Clinical Laboratory.

If you're ready to utilize the Human Genetics Clinical Laboratory services, please don't hesitate to contact us at SBDCH

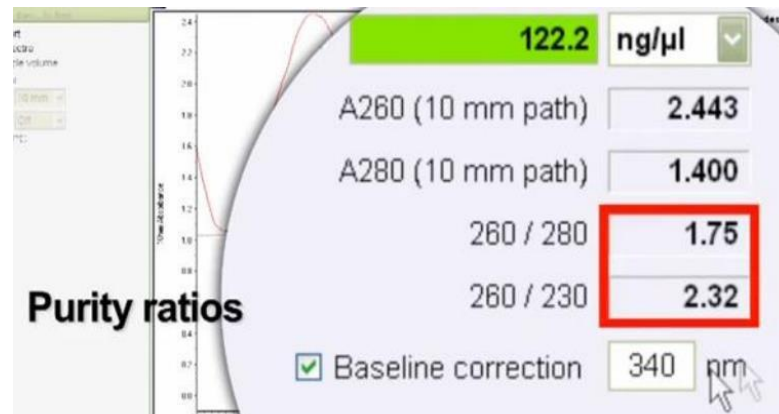
## List of Resources and Services

### Genomic DNA Extraction from buccal swab, saliva, blood, bacteria

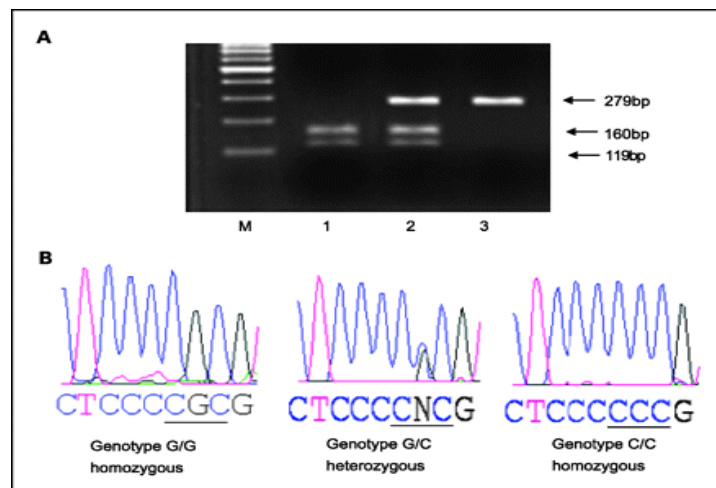




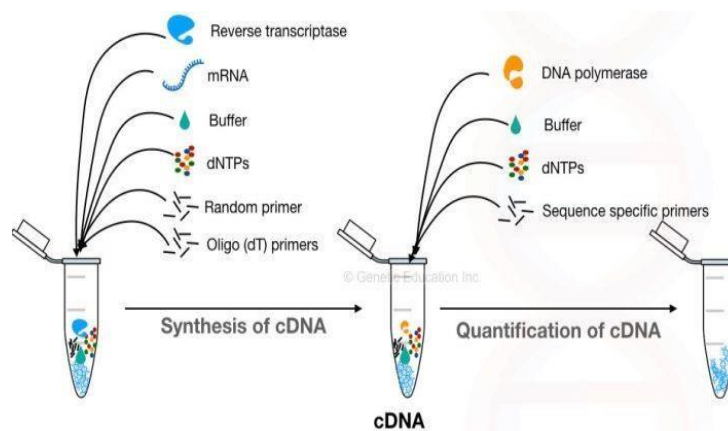
## Nucleic acid Quantification using Quantus Fluorimeter



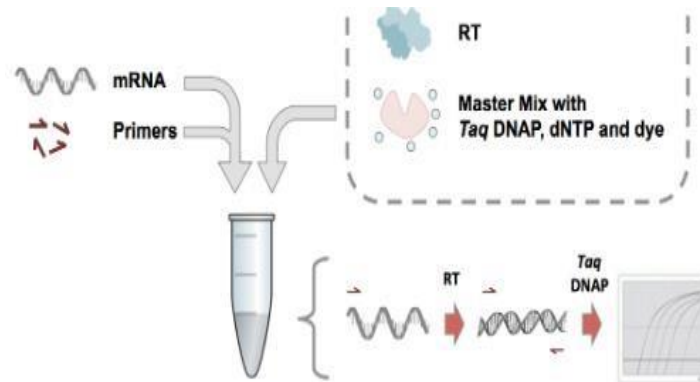
## PCR-RFLP for gene polymorphism analysis



## Reverse Transcription PCR for gene expression



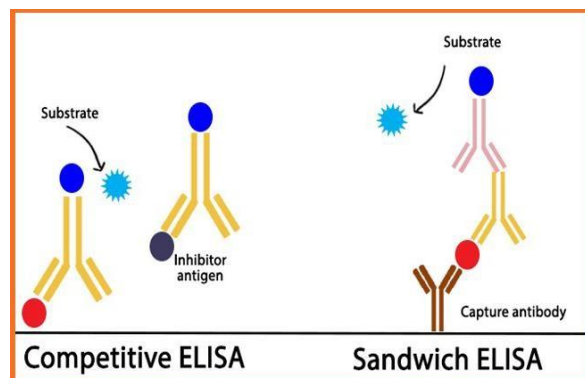
## Real Time PCR for accurate detection of gene mutations and gene expression



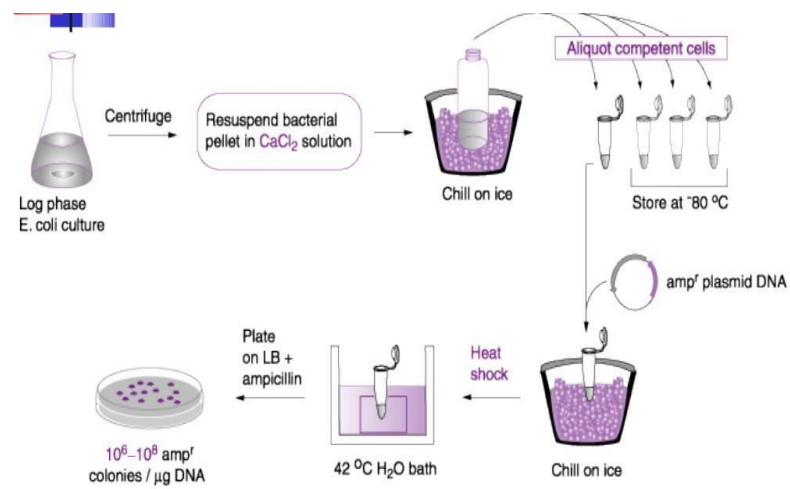
## Cell Morphology Identification



## Quantification of desired cells, nucleic acids and Proteins



## Bacterial DNA transformation using Electroporator



## Sample Storage (Deep freezer $-20^\circ\text{C}$ )

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