A commemorative logo and AYUSH OPD was launched by Dr KJ Sreeram, Director, CSIR-CLRI
Greetings and Namaskar to the Stakeholders of the leather sector

Dear Stakeholders,

“It has been an eventful 75 years of journey for CSIR-CLRI. To commemorate the occasion, the institute has launched the 75 year celebrations logo. Taking our commitment to footsore forward, in association with the CSIR HQ, CLRI conducted a webinar on diabetic footwear. Our journey with the industry in various clusters continues in a vibrant manner. The Leather Post this month details the journey of CLRI in nurturing and strengthening the leather sector.”

Jai Hind

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A commemorative logo to mark the celebrations of 75th Foundation Day of CSIR-CLRI was launched by Dr K J Sreeram, Director, CSIR-CLRI along with three Former Directors of CSIR-CLRI, Dr. G. Thyagarajan, Dr. T. Ramasami and Dr. B. Chandrasekaran. A year-long programme has been planned on this occasion from 24th April 2022 to 24th April 2023.
DNA adduct is a damage caused by reactive chemical species or ionizing radiations. Human cells can repair such damages but some DNA adducts evade the repair process. They interfere with DNA synthesis and induce mutations. Several carcinogenic amines are known to attack DNA and form covalent DNA adducts. These adducts adopt different conformations such as major groove (B), stacked or base displaced (S) and minor groove or wedge-type (W) (Scheme 1). Conformation of the adduct, DNA sequence in which adduct is embedded and involvement of polymerase during replication determine the outcome of the damage. NMR spectroscopy and crystallographic structural studies used to identify the conformers has its own drawback such as requirement of large quantity of samples and time consuming. An alternative method is developed using small molecules to probe the conformation. The metal systems with varied ligand environment that exhibit photoluminescence behaviour like N-acetylaminofluorene (AAF) is considered for this study. (Scheme 1). AAF adduct is placed in different sequence context and interacted with different transition metal complexes. Due to the changes in the flanking and next flanking bases, adduct adopts different conformations, which affects the luminescence behaviour of the metal complexes. When aminofluorene moiety occupies the stacked conformation (inserted between the base pairs), the sensitivity of the probe increases, while the effect is minimal when the aminofluorene moiety is placed in the groove. This research provides an alternative/complementary solution to the other structural based studies and can be extended to other carcinogenic DNA adducts as well.


Scheme 1. Arylamine-induced conformations in DNA using 2-aminofluorene. a) stacked (S) conformation, b) major-groove (B-type) conformation, c) minor groove wedge (W) conformation and (d) structure of C8-AAF-dG.
Novel Bio-Fabrication Modelling Approach from Marine Sources: Synthesis, Characterization and its Composite Formulations

3D bio-fabrication platforms are formulated for patient-specific implants to prevent transmission of viral infections. Current metallic inserts for hip, knee and shoulder get debased in due course of time. Further, it is increasingly critical in accomplishing the high porosity and load-bearing limit, corrosion resistive, non-carcinogenicity required for the bone scaffolds. A novel source of bone mineral from sea shells comprising both natural and inorganic constituents, such as hydroxyapatite (HA) was used in this study. The biogenic source sea shell was converted into hydroxyapatite and used for the fabrication of patient-specific dental implants with the 3D bioprinter. Prior to fixing with real dental implant, 3D model was done to analyse virtually the properties of the bone. The stack of dental implant images collected were visualized in 3D DICOM viewer-based software by selecting the fractured bone in the 3 planes by moving the slices in the appropriate planes and then performing segmentation using image processing toolkits. From the 3D modelling studies the performing segmentation yielded better 3D volumetric reconstruction of the fractured bone.

CSIR-CLRI Regional Centre, Kanpur participated in the National Safety Day organised by VA Tech WABAG Ltd. Scientist In charge Shri. Abhinandan Kumar has attended the program organised at the under-construction site of 20MLD Tannery effluent treatment plant. Shri. Abhinandan hoisted the Safety Flag and distributed gifts to the construction workers for maintaining the safety and following safety protocols at the site. While addressing the gathering, Shri Abhinandan appreciated the management and the workers for achieving 1 million safe hours at the site without LTI (Loss Time Injuries). Further, the importance of safety gears and equipment for workers’ safety at the site was re-iterated and safety pledge was taken by all for the cause of safety, health and protection of environment.

The HoD and the faculty members of Department of Leather Technology, HBTU Kanpur were also present during the meeting. Prof Samsher expressed his concern over lower intake of students for the UG course of Leather Technology offered by HBTU and emphasized on improving the curriculum to make it more attractive for the students. The SIC RC Kanpur conveyed the vision of the Director, CSIR-CLRI for elevating the knowledge and skill of PAN India UG/PG Leather Technology students to the highest level and assured of all support in their academic and research activities for the benefit of the students. An MoU in this regard between CSIR-CLRI and HBTU Kanpur will be signed and exchanged shortly.

The Scientist-In-Charge, CLRI Regional Centre Kanpur had a meeting with Prof Samsher, Vice Chancellor, Harcourt Butler Technical University Kanpur on 30 March 2022 to discuss about various aspects of academic and research collaboration between the two Institutes.
Report on webinar organized by CSIR coinciding with the run-up to CSIR's 80 years' celebrations and CSIR's participation in AzadiKa Amrit Mahotsav held on 10th March 2022.

Diabetes is a chronic disease that affects kidneys, eyes, feet and heart. It is estimated that over 50% of lower extremity amputations are linked to diabetes. Diabetes is a chronic disease that affects kidneys, eyes, feet and heart. It is estimated that over 50% of lower extremity amputations are linked to diabetes.

India has the largest number of diabetics in the world. Due to the increased blood sugar level, the small blood vessels in the feet become clogged and causes diabetic feet. Diabetics are also prone to different kinds of infections. The increased blood sugar level disturbs the sensitive nerves that increases the pain threshold thereby lowering the pain perception. Unnoticed pressure points in the shoe can cause wounds and ulcers. The diabetic foot ulcers can be prevented by regular foot inspection, foot-care and wearing appropriate footwear. CSIR-Central Leather Research Institute (CSIR-CLRI) and MV Diabetes Hospital and Diabetes Research Centre, Chennai have developed special footwear, called DIASTEP, to reduce diabetic foot complications and ensure a better quality of life. DIASTEP is an open footwear with a special top-sole, in-sole and bottom-sole. Soft leather and moulded polyurethane (PU) have been used for making the footwear. Extra depth provides larger area for more effective pressure distribution in the feet. The outsole has special tread for better grip and traction. Extensive patient trials have established the efficacy of the footwear. The footwear helps in reducing shock and preventing foot debilitation. DIASTEP was patented on 30th October 2018. The footwear making technology has been transferred to M/s M V Health Care Pvt. Ltd.

Dr KJ Sreeram, Director, CSIR-CLRI participating in the programme highlighted the importance of spreading the message of developing specialized footwear to aid the patients suffering from diabetes and in alleviating their foot problems arising from the contraction of diabetes. He also urged for using modern tools like A.I. to develop technologically advanced solutions to cater to the holistic development of footwear solution.

Dr Vijay Viswanathan, Head & Chief Diabetologist, Prof M Vishwanathan Diabetes Research Centre spoke on the prevalence of diabetic footwear problems and the economic and job losses arising from people with advance diabetic foot complications like the foot ulcer. He also traced the chronology of the collaboration with CSIR-CLRI in developing specific and targeted solutions to overcome foot debilitation due to diabetes.

Mr Vidhan Bhaiya, CEO, Dr Brinsley and Director, Supply Chain, C & E Limited

Dr Vijay Viswanathan, Head & Chief Diabetologist, Prof M Vishwanathan Diabetes Research Centre
Mr Vidhan Bhaiya, CEO, Dr Brinsley and Director, Supply Chain, C & E Limited spoke about his experiences in understanding the various facets of the diabetic risk associated with the level of diabetes and outlined his journey of floating a start-up company aimed solely at developing footwear for various risk levels of the diabetic patients which are scientifically accurate and aesthetically pleasing.

Mr Md Sadiq, CSIR-CLRI Design and Fashion Studio spoke on his association with Dr Vijay Viswanathan which led to a collaboration on the design and development of customized solutions for addressing the problems of the diabetic foot. He also outlined the salient features of DIASTEP, an off-the-shelf footwear for low risk diabetes and explained about the functionalities and construction parameters that went into the design and development of this product. Design and Fashion Studio also organized the leathers and products for demonstration courtesy of M's GAITONDE Shoes and M's PA Footwear.

Dr Shika, Scientist from CSIR moderated the webinar. Questions from the viewers/audience pertained largely to the availability and procurement of the diabetic footwear in the country.

An agreement was signed between CSIR-CLRI and M/s. Vishnu Chemicals Ltd, Hyderabad on 23 March 2022 for the technical services towards “Evaluation of Sodium Sulphide for its efficacy as unhairing agent”
Director, CSIR-CLRI made two days visit to the Regional Centre, Jalandhar on March 14th, 2022. He visited the facilities and interacted with colleagues of the centre. During forenoon the Director, CSIR-CLRI participated in the industry-institute interaction meet organized by the centre along with Punjab Leather Federation (PLF). On behalf of the Industry, Director, CSIR-CLRI was given a warm welcome by the PLF. Industry appreciated the activities and presence of the centre followed by which, an interactive session with the Industry was conducted. Concerns and requests raised by the Industry was addressed by the Director, CSIR-CLRI.

As an integral part of the OL Implementation Policy a National Level Hindi Seminar was conducted. During which technical presentations were made by three scientists of the CSIR-CLRI on Leather Processing, Chemicals & Environment and Products & Testing (LCEPT)
On 15 March 2022, Director, CSIR-CLRI visited CETP, M/s Regal Leathers (Tannery) and M/s Prime Leathers (Leather Goods factory). Industry gave an overwhelming response to Director, CSIR-CLRI. During the visit to M/s Prime Leathers they requested Director, CSIR-CLRI about their immediate requirement of skilled manpower, and that the training activity should be taken at the earliest.
An informal event was organized to felicitate Shri S K Misra, Chief Scientist and Scientist-in-Charge, Regional Centre, Jalandhar on his superannuation. Stakeholders and fellow colleagues of the centre had shared their everlasting memories and experiences with Shri S K Misra.

After the industry visits, Director, Scientists and centre colleagues participated in the plantation activity towards the upcoming celebration of CSIR-CLRI's 75 years.
Agreements for granting license of Waterless Chrome Tanning Technology were signed with the following 15 tanneries in Jajmau, Kanpur

- M/S Noor Tanners
- M/S Aziz Leather Finishers
- M/S Baba Hide (Old Name- Zoheb Leather Finisher)
- M/S Century Leathers
- M/S International Tanning Industries
- M/S Penza Leathers
- M/S Evergreen Enterprises
- M/S Khalid Tanners
- M/S Prime Tanners
- M/S Overseas Tanning Corporation
- M/S Gauri Tanners
- M/S Shakoor Tannery
- M/S Star Tannery
- M/S Sunrise Tannery
- M/S A.P.F. Tanners

The Director, CSIR-CLRI was on a visit to Regional Centre Ahmedabad on March 16, 2022. During his visit, the Scientist-In-Charge, RC Kanpur also met him in Ahmedabad and explained the progress of various projects and activities being carried out by the Regional Centre Kanpur. The SIC RC Kanpur also participated in the planting of saplings at RC Ahmedabad along with the Director and the SIC, RC Ahmedabad to commemorate 75th year of CSIR-CLRI.

Field survey and Inspection of 192 tanneries in Kanpur under the CPCB project were completed. The Scientific staff of CSIR-CLRI in the Environmental Engineering Division, Environmental Science Lab, CATERS and Regional Centres Jalandhar & Kanpur led their respective teams to complete the inspection of tanneries, collection of wastewater samples and analytical testing of the collected samples.
Dr. A. Suresh Kumar, Senior Scientist, CSIR-CLRI was awarded Young Scientist Award for the year 2021 in Biological Sciences (Saraswathy Srinivasan Prize) by The Academy of Sciences, Chennai

Dr. Janani Radhakrishnan selected for the Early Career Editorial Advisory Board of ACS Biomaterials Science & Engineering

https://pubs.acs.org/page/abseba/editors.html
Regional Centre, Ahmedabad

Skill Upgradation Programmes for rural leather artisans in Gujarat by CSIR-CLRI

CSIR-CLRI in collaboration with Gujarat Rural industries marketing corporation Limited (GRIMCO) conducted skill upgradation programme as detailed below for the upliftment of rural artisans from Scheduled cast community. Eight Training programme under TSP 1907 was conducted at Ramgadhi (Distt - Aravalli) from 10 November 2021 to 7 February 2022 and Twenty-five artisans from rural area learned about products making using leather/synthetic materials starting from pattern making up to product finishing. The trainees acquired the skills of leather/synthetic goods making and able to finish the products with good quality and aesthetic appearance.
As part of all India foot survey, the team deputed for Gujarat State had taken foot measurements at various schools, colleges & housing societies at Ahmedabad. During the foot survey held at M/s Vivekananda College of Nursing, the Principal of the college Smt. Vandana Chauhan interacted with the foot survey team and requested for a special lecture on foot anatomy for the benefit of their students. Based on her request the team led by Mr. K. Gnanaprabhu, Senior Technician, SPDC, CSIR-CLRI conducted a lecture on foot anatomy. The lecture included topics namely Basic Foot Anatomy, Foot Deformities, Causes of Deformities, and Correction methods. In addition to this, importance and need of Indian Foot Sizes was also emphasised. Around 70 students pursuing B.Sc. Nursing attended the session. There was a good response and keen interest shown by the students during the entire session. The management and the students of the Vivekananda College of Nursing expressed their gratitude to CSIR-CLRI team for conducting the Session.

His Excellency Mr Robert Shetkintong, Indian Ambassador to Ethiopia, visited Leather Industry Development Institute, Ethiopia and launched the Workshop on "Cleaner Leather Manufacture". During the visit, LIDI and CSIR-CLRI team explained about the facilities created and accomplishments under the Twinning Project at LIDI by CSIR-CLRI and FDDI.
Students/faculty from PG & Research Department of Microbiology of DG Vaishnav College, Chennai visited CSIR-CLRI on 22 March 2022. The students were divided into 4 batches and visited Leather Processing Technology, Bio-technology & Biochemistry, Chemical and Biological Pilot Plant, Environmental Engineering Division, Environmental Science Laboratory. The students showed immense interest and expressed their happiness during the visit and told that the fermentation techniques would be useful for their project work as it was part of their syllabus.
Students/faculty from Department of Chemistry of Arignar Anna Arts and Science College, Krishnagiri, Tamilnadu visited CSIR-CLRI on 30 March 2022. The students were divided into 4 batches and visited Leather Processing Technology, Chemical and Biological Pilot Plant, Environmental Engineering Division, Environmental Science Laboratory, Polymer Science & Technology.
"Trends in Computational Chemistry"

On the occasion of superannuation of Dr. V. Subramanian, Outstanding Scientist, CSIR-Central Leather Research Institute had organized a virtual seminar on "Trends in Computational Chemistry" to honour him on 25th March 2022 at 2.30 PM. Dr. K.J. Sreeram, Director, CSIR-CLRI inaugurated the event with his warm welcome address. Dr. N. Sathyamurthy, Professor & Former Director, IISER-Mohali was the first speaker and delivered his lecture on the topic ‘From Quantum Chemistry to Quantum Dynamics via Machine Learning’. In addition to his talk, he also shared his memorable moments with Dr. V Subramanian. Subsequently, Prof. P.K. Chattaraj, Professor, IIT-Kharagpur gave his talk titled ‘On the Structure of a Dynamically Stable Molecule’. Later, Dr. G. Narahari Sastry, Director, CSIR-NEIST delivered his lecture on ‘Computation in Translational Research’. On behalf of all students, Dr. R. Parthasarathi, Principal Scientist, CSIR-IITR, the first Doctoral student of Dr. V. Subramanian, talked on the topic ‘Journey of a Weak Bond’, where he highlighted his own work along with the work of other students as well. Finally, the mentors, colleagues and associates of Dr. V. Subramanian have shared their lovable and memorable nostalgic moments with him. Dr. T. Ramasami, Former Secretary, DST and Former Director, CSIR-CLRI, who is also his mentor, shared some of the memorable moments with him. Then Dr. V. Subramanian gave his response and conveyed his gratefulness to all. He talked about his personal and research experience working in CSIR-CLRI and with his collaborators. He shared his experience with his mentor, friends, colleagues and students. He expressed his emotions and bonding with all the colleagues, especially with the associates of Inorganic and Physical Chemistry division. Finally, Dr. P. Thanikaivelan, Senior Principal Scientist, CSIR-CLRI proposed the vote of thanks. The seminar was successfully completed with lot of emotions and nice memories. The event was attended by more than 140 members.
Inauguration of AYUSH OPD – Siddha Clinic at CSIR-Central Leather Research Institute under Swasthya Rakshan Programme was done on 10 March 2022 for the benefit of CSIR-CLRI staff and their dependents.

The Director and Staff wish them a happy and healthy retired life!

Dr. V. Subramanian
Outstanding Scientist

Smt. Prema Sasidharan
Private Secretary

Shri V. Jayaraman
Senior Technician(2)

Shri S. K. Misra
Chief Scientist
CSIR-CLRI announces the commencement of the following placement oriented courses:

**Leather Processing**
- Post Graduate Diploma Programme in Leather Technology
- Diploma in Leather Processing
- Short Term Executive Skill Development Programme in Leather Processing
- Integrated Skill Development on Quality Control Methods in Leather Manufacture
- Computerized colour Matching for Leather manufacturing

**Leather Goods and Garments**
- Diploma in Leather Goods Manufacture
- Short Term Executive Skill Development Programme in Leather Goods Manufacture
- Training Programme in Leather Goods Design (Manual and CAD)
- Diploma in Leather Garment Manufacture
- Short Term Executive Skill Development Programme in Leather Garments manufacture
- CAD for Garments

**Leather Allied Sectors**
- Short Term Executive Training Programme on Occupational Health and Safety for Leather and Allied (Product) Industries
- Short Term Executive Training Programme on Testing and Calibration for Leather Sector
- Repair, restore and maintenance of leather products
- Short Term Executive Training Programme on Waste Management for Leather Sector

**Leather and Leather products**
- Post Graduate Diploma Programme in Leather Products Technology
- Quality and Visual Inspection of Leather and Leather Products
- Skill Training Programme in Leather and Leather-like materials for Emerging Entrepreneurs
- Short Term Executive Skill Development Programme in Leather Upholstery Manufacture
- Course in Fashion Design and Development for Leather Lifestyle Products

**Allied Science courses**
- Bioinformatics Associate/Analyst
- Quality Control Chemist – Microbiology
- QA Chemist Equipment Validation - Life Sciences
- Nuclear Magnetic Resonance (NMR) Spectroscopy Analyst
- Quality Assurance Chemist
- Leather Biotechnologist
- Enzyme Technologist
- Structural Analytical Technologist
- rDNA Technologist

**Footwear**
- Diploma in Footwear Manufacture
- Short Term Executive Skill Development Programme in Footwear manufacture
- Training programme in GAIT Analysis
- CAD for Footwear

Please visit [https://clri.org/training.aspx](https://clri.org/training.aspx) for online / offline submission of duly filled application.

For more info:
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Cutting Edge Technologies in Leather Processing
Consultancy Services
Education & Training
State-of-the-art Testing Facilities
Environmental Technology
Health Care Products

Striving for Excellence and Global Leadership in Leather Technology

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