

Forensic Science Ireland Implements DBLR™ for Database Searches

Investigative Application Rapidly Calculates Millions of Likelihood Ratios in DNA Evidence

PORIRUA, NEW ZEALAND, December 3, 2024 /EINPresswire.com/ -- [Forensic](#) Science Ireland (FSI), an associated office of Ireland's Department of Justice, has begun using DBLR™, an investigative application for rapidly calculating millions of likelihood ratios (LRs) in [DNA](#) evidence, for searching mixed DNA profiles against the Irish DNA database.



DBLR™ is extremely useful for multiple applications, including performing unidentified human remains identification, saving analysts hours of manual kinship calculations."

Dr. Maarten Kruijver

When used in conjunction with [STRmix](#)™ – forensic software capable of resolving mixed DNA profiles previously regarded as too complex or degraded to interpret – DBLR™ enables forensic laboratories to achieve superfast database searches as well as visualizing the value of DNA mixture evidence, carrying out mixture-to-mixture matches, determining if there is a common donor

between samples, and calculating likelihood ratios for any conceivable kinship relationship.

Forensic labs using DBLR™ in concert with STRmix™ are also able to explore interpretation results from a DNA profile given different hypotheses.

Thousands of LR's can be calculated and plotted to determine the expected range for different hypotheses, quickly helping to inform whether a profile is suitable for comparison with a person of interest or suitable for entry onto a database for matching.

FSI was established in 1975 to provide a scientific service to Ireland's Criminal Justice System by analyzing samples submitted from crime scenes and providing expert evidence in criminal trials. Embracing the ever-increasing advances in forensic science, FSI is also custodian of the National DNA Database System.

While FSI is very much a working service laboratory, its staff members are encouraged to contribute to scientific conferences worldwide and publish their work.

FSI was a founding member of the European Network of Forensic Science Institutes. It is accredited according to ISO17025 and holds an Excellence through People certificate.

"DBLR™ is extremely useful for multiple applications, including performing unidentified human remains identification, saving analysts hours of manual kinship calculations," says Dr. Maarten Kruijver, the developer of DBLR™.

"It is also highly effective in generating intelligence for cold cases when looking at profiles that span multiple items and may contain related or common DNA donors," Dr. Kruijver continues.

The latest version of DBLR™, v1.4, allows forensic laboratories using STRmix™ to:

- Apply population stratification and utilize sequence-based data from STRmix™ NGS in the Kinship, Search Database, and Explore Deconvolution modules;
- Leverage probabilistic links within the Kinship module to probabilistically condition on the presence of a sample donor; and
- Undertake direct comparison of one or many components of a forensic DNA mixture to a database of known individuals.

DBLR™ v1.4 also enables STRmix™ users to: determine the genotypes of the most likely contributors to a profile; combine multiple evidence profiles under the assumption that there is a common contributor within different samples; build any pedigree imaginable and calculate LRs given different propositions; and model linkage, mutation, and FST in the Kinship module.

DBLR™, STRmix™, and a third software package developed by the STRmix team, FaSTR™ DNA, complete the full workflow from analysis to interpretation and database matching. FaSTR™ DNA rapidly analyzes raw DNA data generated by genetic analyzers and standard profiling kits and assigns a number of contributors (NoC) estimate.

The STRmix team has also developed STRmix™ NGS, a fully continuous mixture interpretation and LR generation software for profiles generated using Next Generation Sequencing (NGS).

The effectiveness of all of these solutions, coupled with the highly successful track record STRmix™ has established in producing usable, interpretable, and legally admissible DNA evidence in more than 690,000 criminal cases, has led to their widespread adoption in forensic labs worldwide.

STRmix™ is currently being used in 119 forensic laboratories worldwide. This includes 20 forensic labs throughout Europe, the United Kingdom, Asia, the Middle East, Canada, and the Caribbean, all nine state and territory forensic laboratories in New Zealand and Australia, and 90 forensic labs in the U.S.

For more information about STRmix products, visit www.strmix.com.

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