New

Ministry

Public Safety and Emergency Services

Describe: Basic Job Details

Position

Position ID

Position Name (200 character maximum)

Scientific Lead, Forensic Biology

Requested Class

Job Focus

Supervisory Level

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Organizational Structure

Division, Branch/Unit

☐ Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

Design: Identify Job Duties and Value

Job Purpose and Organizational Context

Why the job exists:

Reporting to the Director of Forensic Services, the Scientific Lead is responsible for leading, developing, coordinating, and delivering the Provincial Forensic DNA Program. The position leads the research, development, and delivery of new forensic tests and procedures and evaluates results to ensure that findings are incorporated into program operations. The position ensures the forensic DNA laboratory delivers professional forensic services that meet the standards established by the Canadian judiciary, international accrediting bodies, and the forensic science community. The Scientific Lead also serves as the provincial expert in human forensic DNA analysis.

The Scientific Lead is a senior supervisory position that leads and directs the forensic laboratory team, which consists of forensic biologists, administrative, and contract staff. The position is responsible for coordinating, prioritizing, implementing, and evaluating the laboratory's activities, including the recruitment, training, and supervision of all team members. It is the responsibility of this position to ensure that a highly skilled and proficient team is functioning effectively to conduct complex forensic analyses in a variety of settings, including the laboratory and Provincial Court. The position develops

partnerships and collaborates with law enforcement, other government agencies, scientific laboratories, and non-governmental organizations to advance the delivery of forensic DNA services across the province.

The position provides information and recommendations to police officers, scientists, and managers to facilitate criminal investigations and prosecutions. It also coordinates forensic analysis activities within the division and with other provincial, national, and international law enforcement agencies to ensure consistency, quality, and timely service delivery.

In addition, the Scientific Lead represents the provincial DNA program as a recognized authority in the field by participating on provincial scientific committees and advisory panels, and by contributing at the national and international level to committees that address emerging scientific and policy issues in forensic biology. The position supports the advancement of forensic science through peer-reviewed publications, applied research, and innovation, and presents at provincial, national, and international conferences as a keynote or invited speaker to share expertise, best practices, and new developments in forensic DNA analysis.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Direct forensic research projects, non-forensic research projects, and development of forensic tests and procedures.

- Provide scientific leadership and direction for the Provincial Forensic DNA Program, serving as the head of one of three provincial human forensic laboratories in Canada and a recognized leader in the field of human DNA forensics.
- Develop and implement forensic laboratory standards that are acceptable for court purposes and that meet professional forensic requirements and international accreditation standards.
- Direct forensic research projects and oversee the development and validation of new forensic DNA tests and procedures to improve efficiency, reliability, and evidentiary value.
- Identify emerging forensic needs, including new tests that should be developed or existing methods that require updating or replacement.
- Develop and implement research plans for the creation, testing, and validation of forensic methodologies.
- Assess research outcomes to ensure developed tests meet departmental needs, accreditation requirements, and court standards.
- Train, mentor, and supervise laboratory staff, temporary staff, and students in proper forensic techniques and research practices.
- Develop and coordinate forensic and non-forensic research partnerships with other government laboratories, universities, colleges, other provinces, and enforcement agencies.
- Utilize and refine statistical software to support forensic casework, data analysis, and research validation.
- Publish and present research results for acceptance by the scientific community through peer-reviewed journals, books, and conference presentations.
- Communicate and share expertise with the broader scientific community by presenting at conferences and teaching or training through government and university partnerships.
- Participate on provincial, national, and international scientific advisory committees to advance forensic science practice and policy.
- Present scientific expertise at provincial, national, and international conferences to share best practices and new developments in forensic DNA analysis.

2. Management of forensic biology operations.

- Provide technical and scientific leadership for the forensic biology laboratory, serving as the Technical Leader responsible for the review and approval of all analytical methods, validations, training, qualifications, academic records, proficiency testing, standard operating procedures, and quality assurance activities.
- Ensure the forensic laboratory attains and maintains accreditation to the appropriate international

standards through the Standards Council of Canada, including responsibility for audits, corrective actions, and quality improvements.
- Maintain authorization to operate the Combined DNA Index System (CODIS) and ensure full compliance with all requirements and acceptance standards established by the National DNA Data Bank (NDDB).
- Oversee implementation of the quality management system, acting as interim Quality Manager when required, and ensuring the system is effectively implemented, maintained, and followed at all times.
- Review non-conformances and implement corrective and preventive actions to ensure laboratory operations meet or exceed accreditation standards.
- Develop and enforce court-acceptable standards for all forensic activities, results, and reports associated with the laboratory.
- Manage and supervise the forensic team, ensuring effective day-to-day operations, workload distribution, and professional conduct.
- Develop and monitor performance management agreements, work plans, shift schedules, and wage contracts in collaboration with Team Leads.
- Conduct performance evaluations, address staff issues, motivate personnel, resolve conflicts, and make recommendations to management regarding employee performance matters as required.
- Ensure laboratory health and safety compliance, fostering a safe and efficient work environment.
- Evaluate and integrate new technologies into laboratory operations to improve analytical capacity, efficiency, and scientific reliability.
- Plan and manage the laboratory budget, ensuring fiscal accountability and effective allocation of resources.
- Oversee sourcing, evaluation, and procurement of laboratory equipment, consumables, and services required for sustained operations.
- Direct research and development priorities to support continuous improvement of laboratory operations and forensic methodologies.
- Act as the laboratory's Security Officer, responsible for developing and managing the security plan to meet ISO/IEC and Standards Council of Canada requirements.
- Develop partnerships with enforcement agencies and stakeholders to facilitate DNA analysis and coordinated investigative support.
- Develop and deliver training programs in forensic evidence collection for Alberta's police services and other enforcement partners.
- Provide expert testimony in court on forensic laboratory facilities, procedures, and statistical analyses of databases.

3. Provide forensic DNA expertise and analysis to support law enforcement investigations and public safety mandates. This support is also extended to other policing or investigative agencies in accordance with established agreements.

- Forensic case management (use of proper continuity, documentation, and evidence control).
- Accepting, storing, cataloging, and taking possession and control of submitted evidence.
- Scientific analysis and interpretation of forensic casework samples.
- Preparing case reports and documents for presentation in court.
- Providing expert testimony in court.
- Performing independent reviews of casework performed by forensic scientists.
- Assisting police officers (for example, collection of best evidence under the authority of a search warrant) as required.
- Providing forensic advice to enforcement personnel (usually regarding evidence collection and packaging).
- Provide training to police officers in the areas of evidence collection, continuity, and case submission upon request.
- Providing forensic expertise and guidance to other forensic laboratories, police agencies, medical examiners, hospitals, and universities.

Problem Solving

Typical problems solved:

The Scientific Lead is responsible for solving a wide range of complex and diverse problems spanning

scientific, operational, and organizational domains. At the scientific level, the Scientific Lead resolves issues related to the development, validation, and implementation of new forensic DNA testing methods and technologies. This includes troubleshooting analytical challenges, addressing inconsistencies in DNA profiles, and determining when research approaches require modification to meet forensic and accreditation standards. The Scientific Lead directs research and development of new and more effective ways of gathering, analyzing, and presenting evidence, and must also solve problems related to maintaining scientific validity, ensuring method reliability, and integrating emerging technologies without disrupting ongoing casework.

Operationally, the Scientific Lead addresses problems associated with managing a high-volume forensic DNA laboratory that supports law enforcement investigations and prosecutions. This includes identifying and resolving workflow bottlenecks, staffing shortages, equipment failures, and resource constraints, while maintaining the quality, timeliness, and integrity of results. The Scientific Lead must continuously balance shifting investigative priorities, court-imposed deadlines, and emergent case requests. Other challenges include maintaining accreditation compliance, implementing corrective actions from audits or quality reviews, and managing issues that arise from inter-agency coordination or stakeholder expectations.

The Scientific Lead is also required to manage complex case-related problems that may carry significant legal, operational, and reputational risk. This includes evaluating and defending the validity of forensic methods, data interpretation, and reporting decisions, as well as addressing challenges raised in court or during peer review. The Scientific Lead must ensure that all forensic outputs meet judicial standards of admissibility and withstand scrutiny from legal counsel, accrediting bodies, and the public.

The position operates with limited direct oversight and requires expert-level judgment, critical analysis, and the ability to integrate scientific, technical, and administrative perspectives to resolve problems that have immediate and long-term implications for the credibility and effectiveness of the forensic DNA program.

Types of guidance available for problem solving:

Guidance for problem solving is available through multiple internal and external sources. The Scientific Lead may consult with senior scientific staff, quality assurance specialists, technical experts, and other accredited forensic laboratories across Canada to resolve complex analytical or operational challenges. Input is also available from equipment manufacturers, professional associations, and national or international forensic science experts to support methodological decisions or technology implementation.

Within government, guidance may be sought from departmental executives, legal counsel, and intergovernmental partners involved in forensic service delivery. Collaboration with police agencies, regulatory bodies, and academic institutions provides additional expertise and perspective, supporting sound decision-making, policy development, and continuous improvement of laboratory operations. While these sources offer advice and technical insight, the Scientific Lead retains ultimate responsibility for integrating guidance into laboratory operations, research, and casework decisions.

Direct or indirect impacts of decisions:

Direct Impact:
Decisions made by the Scientific Lead have immediate and significant effects on the day-to-day functioning of the forensic DNA laboratory. These include the accuracy, reliability, and timeliness of forensic results, which are critical to law enforcement investigations and prosecutions. The Scientific Lead's choices influence staff performance, workflow prioritization, resource allocation, and compliance with accreditation and legal standards. In high-profile or complex cases, these decisions directly affect investigative outcomes, the quality of evidence presented in court, and the ability of prosecutors to secure just outcomes. Errors or lapses in operational, scientific, or quality management decisions could compromise the integrity of evidence and have serious consequences for the justice system.

Indirect Impact:
Decisions also have broader, long-term effects on the laboratory, the justice system, and public confidence in forensic science. By establishing operational procedures, validation standards, and training programs, the Scientific Lead shapes the laboratory’s reputation for scientific excellence and credibility.

Strategic decisions regarding research, technology adoption, and inter-agency collaboration influence national and international forensic practices and partnerships. Indirectly, these decisions affect policy development, the professional development of staff, and the sustainability of the laboratory's operations. The Scientific Lead's guidance in high-stakes cases and oversight of accreditation, quality assurance, and methodological standards contributes to long-term confidence in forensic evidence, judicial outcomes, and public trust in law enforcement.

Key Relationships

Major stakeholders and purpose of interactions:

1. Police Agencies - municipal, provincial, and federal (External - Daily): Collaborate on casework priorities, evidence submission, investigative support, and interpretation of forensic results.
2. Alberta Crown Prosecution Services (Internal - Daily) – Provide expert input on admissibility of DNA evidence, case preparation, DNA reporting results, and courtroom testimony.
3. Office of the Chief Medical Examiner (OCME) (Internal - Weekly) – Coordinate on forensic case investigations, biological evidence handling, and interpretation in death investigations.
4. Standards Council of Canada (SCC, Accreditation) (External - Weekly) – Ensure laboratory meets annual national accreditation standards, manage compliance, and implement corrective actions as required.
5. National DNA Data Bank (NDDB) (External - Monthly) - Ensure laboratory meets annual national accreditation standards, manage compliance, and implement corrective actions to maintain CODIS certification and access.
6. National Forensic Laboratory Services (NFLS) (External - Monthly) – Align methodologies, share best practices, and consult on complex or high-profile forensic cases.
7. Centre of Forensic Sciences (CFS, Ontario) (External - Monthly) – Collaborate on specialized forensic testing, validation, and method development.
8. Laboratory Services and Judicial Medical Laboratories (LSJML) (External - Monthly) – Share expertise, coordinate testing protocols, and exchange quality assurance practices.
9. Other Provincial and Territorial Forensic Laboratories (External - Quarterly)– Collaborate on research, method development, and technology transfer.
10. Scientific Working Group on DNA Analysis Methods (SWGDAM)(External - Quarterly): Consult on DNA methodology standards, validation, and best practices to ensure consistency with international forensic guidelines.
11. Professional Associations (e.g., Canadian Society of Forensic Science, International Society for Forensic Genetics) (External - Quarterly) – Maintain knowledge of emerging practices, standards, and innovations in forensic DNA analysis.
12. Post-secondary Institutions and Academic Researchers (External - Quarterly) – Engage in forensic research partnerships, training, and professional development.

The Scientific Lead interacts with these stakeholders to ensure the laboratory delivers accurate, timely, and legally defensible forensic results; maintains accreditation and quality management standards; supports law enforcement investigations and prosecutions; participates in method development, research, and technology transfer; and contributes to professional development and knowledge sharing within the forensic community.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Doctorate	Science		

If other, specify:

Minimum of 3 years of human DNA experience and 10 years experience in a forensic laboratory

Job-specific experience, technical competencies, certification and/or training:

The Scientific Lead must have extensive knowledge of laboratory accreditation standards, quality management systems, and the accreditation process. The role requires an exceptional level of technical expertise in core forensic DNA techniques, including:
DNA extraction
Polymerase Chain Reaction (PCR)
Capillary electrophoresis

DNA fragment analysis
DNA sequencing

In addition, the position requires advanced functional expertise in forensic laboratory operations, including:
Evidence handling and chain-of-custody management
Searching for and collecting biological substances
Physical matching of biological or material evidence
Application of forensic population genetics and statistical analyses
Providing expert testimony in court
Forensic case management and workflow prioritization
Laboratory accreditation compliance
Quality management systems implementation and oversight

The Scientific Lead applies this combination of technical, scientific, and operational skills to ensure the laboratory produces accurate, timely, and legally defensible results that support law enforcement investigations and prosecutions.

Operational responsibilities encompass managing budgets and contracts, ensuring adequate supplies and properly trained staff, supervising and developing personnel, setting and maintaining standards, prioritizing casework and research projects, and maintaining accreditation and quality assurance systems. The Scientific Lead must continuously adjust priorities in response to changing investigative, legal, and operational requirements, such as court deadlines and emergent cases.

Exceptional independent judgment, planning, and time management are essential to balance competing demands and coordinate multiple investigations or projects simultaneously. In addition to scientific expertise, the Scientific Lead must demonstrate strong management and supervisory skills, foster effective professional relationships with internal and external stakeholders at the provincial, national, and international levels, and cultivate a collaborative environment that encourages creativity and innovation within the laboratory team.

The Scientific Lead must demonstrate exceptional leadership, decision-making, organizational, time management, and supervisory skills to lead a team of scientists and manage external contractors, ensuring laboratory objectives are met efficiently, safely, and in compliance with legal and accreditation standards. Advanced written and technical communication skills are required to prepare reports, briefings, and publications for senior management, legal counsel, and external agencies. Exceptional oral communication skills are essential for delivering expert testimony, academic presentations, forensic training, and field advice. The Scientific Lead must clearly convey complex scientific results, actively listen to feedback, and provide guidance on novel investigative situations while maintaining rigorous forensic and operational standards.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job
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