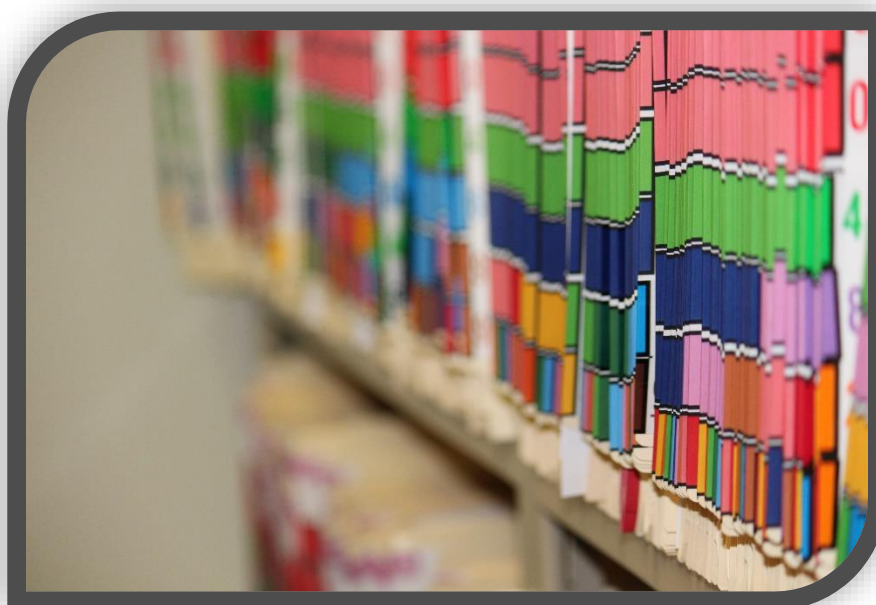




Montana Department of Justice Forensic Science Division Annual Report - 2021



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The mission of the Montana Forensic Science Division is to use operationally efficient and financially responsible practices as the laboratory provides accurate, objective, and timely forensic analyses to the criminal justice community in order to maximize value to the citizens of Montana.

Executive Summary

The Forensic Science Division underwent a major change in 2021 with the departure of our Division Administrator, Scott Larson. Scott's role at that lab spanned approximately 7 total years, first serving as the Toxicology Supervisor and then the Division Administrator. He did a tremendous job over his tenure with his great vision for the future. In October 1, Travis Spinder, was officially hired as the new Division Administrator. I am a Montana native and have worked in the Firearm and Toolmark section of the laboratory for the past 20 years. This year has presented the division with challenges that were out of our control, but our amazing staff came up with quick solutions and we didn't miss a beat. The main challenge was in the national supply chain which resulted in a shortage of blood tubes needed to collect toxicology specimens and pipet tips used in toxicology, chemistry, and DNA sections.



The Forensic Science Division has seen increased case submission over the past few years and the staff has assessed procedures and been able to meet the caseload demand. The 2021 legislature provided us with additional positions in the toxicology and evidence sections to address these demands. The toxicology section has outgrown its current space and internal renovations are being made to make additional space available.

The state has seen a dramatic increase in the use of fentanyl. The impact on the laboratory has been felt by an increase in postmortem cases for the medical examiner system and increased case work testing for the toxicology and chemistry sections. We do our best to provide timely results that will help with the investigation of these cases.

Travis Spinder, Administrator

Forensic Science Division

The Forensic Science Division (FSD), better known as the State Crime Lab, is one of eight Divisions within the Department of Justice. It was established in Montana Code in 1977.

The Division has facilities in both Missoula and Billings. The Missoula facility has the following disciplines: medical examiners, biology, toxicology, chemical analysis, latent prints, firearms/toolmarks, quality assurance, and evidence sections. The Billings facility has the following disciplines: medical examiners, chemical analysis, and evidence sections.

FSD voluntarily participates in Project FORESIGHT which is a business-guided self-evaluation of forensic science laboratories across the globe. For the second year in a row FSD was awarded the FORESIGHT Maximus Award by the American Society of Crime Laboratory Directors (ASCLD). This award is presented to laboratories operating at 90% or better of peak efficiency. This award is in recognition of all the hard work that the entire staff at the Forensic Science Division does for the citizens of Montana.

<https://business.wvu.edu/research-outreach/forensic-business-studies/foresight>

Staff

The Lab continues to recruit a variety of scientists and staff with a broad range of skill sets to contribute to our mission. We have thirty-four scientists, four medical examiners, and eleven administrative/support staff.

Through grant funding the lab added a coroner liaison that serves to facilitate how the Medical Examiner's Office and the Forensic Science Division can adequately support county coroners and build more consistency in death investigation. The Coroner Liaison can facilitate the development of standardized procedures for death investigation across the State to assist in the exchange of quality case information between the coroners and medical examiners. The focus of this position is interagency communication and debriefings to provide optimal information collection for accurate death certification.



Accreditation

Accreditation is the process by which organizations throughout the world demonstrate an applicable quality management system and properly perform testing activities, calibrations, or examinations according to the accrediting body requirements. The accrediting body determines the recertification or verification cycle to ensure demonstrating compliance with the accreditation requirements, the organization's policies and procedures, and other implemented requirements.

The Laboratory was originally accredited under the American Society Crime Laboratory Director's/Laboratory Accreditation Board's (ASCLD/LAB) Legacy program in 2005. In 2010, we attained a higher level of accreditation to ISO/IEC 17025 standards for testing laboratories, which are the current standards for forensic labs, as well as ASCLD/LAB-*International* Supplemental Requirements. In 2017, the Breath Alcohol Section was accredited to ISO/IEC 17025:2005 standards for calibration laboratories. In 2019, the laboratory continued accreditation with the ANSI National Accreditation Board (ANAB) through compliance with AR 3125 and ISO/IEC 17025:2017 requirements; these accreditation requirements are applicable to both facilities. ANAB provides laboratory accreditation to ISO/IEC 17025 and a variety of standards for many industry-specific programs.

In 2020, the Medical Examiner Office (MEO) completed a two-year project by earning provisional accreditation status by the National Association of Medical Examiners (NAME). After an on-site inspection in June of 2021, the MEO received full accreditation status for both facilities. The NAME requirements represent minimum standards for an adequate medicolegal system. NAME accreditation reflects that the MEO provides consistent quality standards for optimal death investigation in all aspects of the process.

Outreach

Our interactions with a broad cross-section of legislators, citizens, citizen groups, and criminal justice agencies and organizations across Montana continue to be a focus of our Division. We provide educational presentations across the state when needed. Historically lab representatives attended conferences or met with boards for the Montana Sheriffs and Peace Officers Association, the Montana Association of Chiefs of Police, the Montana County

Attorneys Association, the Montana Coroners Association, and the Attorney General's Law Enforcement Advisory Committee. When requested the Division holds open house events for legislators and the public and provides regular tours for the public. Our staff routinely spends over 300 hours training law enforcement, prosecutors, defense attorneys, judges, and the public in matters tied to the forensic sciences.

National Matters

The Organization of Scientific Area Committees (OSAC) for Forensic Science works to strengthen the nation's use of forensic science by facilitating the development of technically sound forensic science standards and by promoting the adoption of those standards by the forensic science community. These standards are written documents that define minimum requirements, best practices, standard protocols, and other guidance to help ensure that the results of forensic analysis are reliable and reproducible. The Lab is proud to have personnel that have served on national committees critical to the advancement of technological standardization of forensic sciences.

Forensic Science Laboratory Advisory Board

The Forensic Science Laboratory Advisory Board was established in 1996 by Attorney General Joe Mazurek and has met nearly every year since. The Board serves as an advisory council and as an independent body to investigate complaints of negligence or misconduct. It also serves as a communication link between the Lab and its stakeholders. Due to the transition to a new administrator the board did not meet in 2021. Plans are in place to make a change to the representatives to the board by relying on representatives from different associations within the state. Board members include representatives from:

- Montana Attorney General
- District Judge Representative
- Montana Coroners Association Representative
- Non-Law Enforcement Coroner
- Office of the Public Defender Representative
- DOJ's Division of Criminal Investigation Administrator
- Montana Sheriff and Peace Officers Association Representative
- Montana Association of Chiefs of Police Representative
- Montana Department of Correction Representative
- Montana County Attorney's Association Representative

We are grateful for the time and dedication of these members; their input helps improve the Crime Lab and its services.

Grant Funding

FSD takes advantage of federal grant funding whenever possible. In 2021, the following grants were received, totaling over \$1.2 million. Without this financial assistance, many of these projects would not have happened.

1. **BJA "Paul Coverdell Forensic Science Improvement" Grant**
 - \$296,966: Training/instrumentation/equipment/supplies/coroner education
2. **BJA "DNA Capacity Enhancement and Backlog Reduction" Grant**
 - \$521,655: Funding for personnel/training/supplies/DNA lab case management improvements

3. NIJ “National Forensic Science Center” Grant

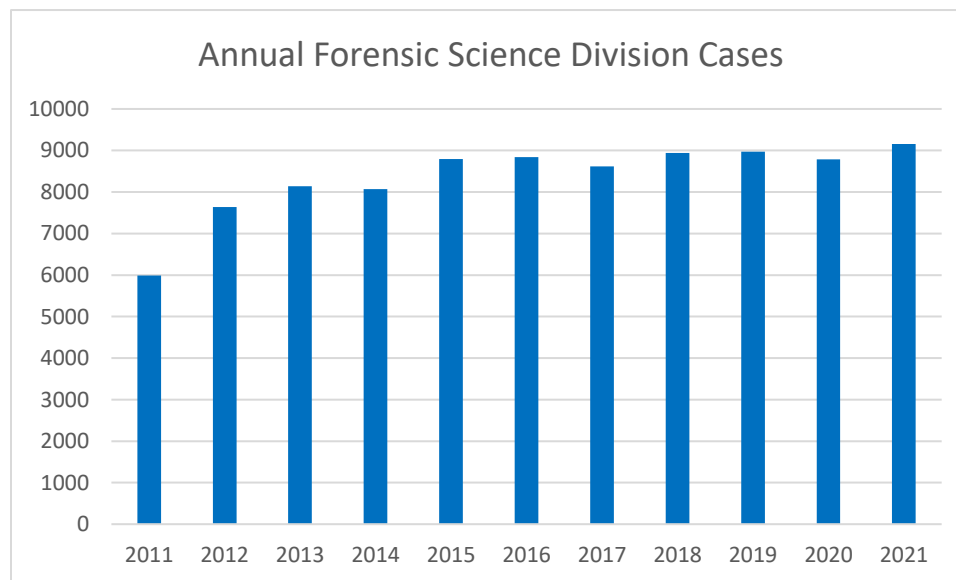
- \$107,343: Coroner Liaison position, scholarships for hosting medical students to promote interest in forensic pathology as a career choice, and the development of national forensic training for law enforcement, attorneys, and judges.

4. Centers for Disease Control “Overdose Data to Action (OD2A): Increasing Surveillance and Prevention to Reduce Opioid Misuse in Montana” Grant *(awarded through the Montana Department of Public Health and Human Services)*

- \$236,662: drug-related autopsy reimbursement for counties/enhanced toxicology testing in complex postmortem cases/instrument parts and maintenance

Caseloads

As with many forensic labs nationwide, FSD has seen a steady influx in cases over the last decade. 2021 was a record for the number of cases (9156) submitted. Cases can be further divided into requests for testing within specific sections. One case may generate multiple requests for services throughout the Lab or within a section. For example, a single handgun may involve test requests for the presence of latent prints, DNA, firearms analyses and in some instances another case(s) for the MEO. Cases can contain anywhere from one to more than one-hundred items of evidence. Section specific workloads are covered below.



State Medical Examiner's Office

In 2021 the Montana Medical Examiner's Office employed four forensic pathologists, two autopsy assistants, and two part-time autopsy assistants. Administrative support was provided by the Forensic Science Division. Two pathologists work at the State crime laboratory in Missoula to serve the needs of coroners in western Montana. Two pathologists work at the State morgue facility in Billings to serve the needs of coroners in Eastern Montana.



The Medical Examiner's Office has focused on improving casework information and statistics. The Office releases an annual report, which summarizes annual case results based on manner of death, age of the decedent, deaths involving firearms, deaths attributable to alcohol or drugs, natural deaths, and report turn-around time performance. **The full report is available on the Montana Department of Justice's website under the Forensic Science Division tab.**

In 2021, we performed 836 postmortem examinations: 458 in Missoula and 378 in Billings. This represents a 12% increase over the previous year. Our pathologists responded to a limited number of scene investigations and recoveries. They also testified in court and gave educational presentations at the annual Montana Coroner Advanced and Basic Coroner trainings. In addition, consultations with coroners, law enforcement, county attorneys, organ and tissue procurement agencies, and funeral directors were common.

Staff

Dr. Robert Kurtzman	Chief Medical Examiner, Billings
Dr. Willy Kemp	Deputy Medical Examiner, Billings
Dr. Sunil Prashar	Deputy Medical Examiner, Missoula
Dr. Aldo Fusaro	Deputy Medical Examiner, Missoula
Heather Krell	Autopsy Assistant, Missoula
Michelle Brighting	Part Time Autopsy Assistant, Missoula
Heather Beeler	Autopsy Assistant, Billings
Tonya Shaffer	Part Time Autopsy Assistant, Billings

Successes

1. Partner in the National Center on Forensics grant through NIJ along with George Mason University, the American Society of Clinical Pathologists, and the National Association of Attorney Generals, which includes a Coroner Liaison position and training for medical and pathology students

Challenges

1. Statewide utilization of death case management system by county coroners
2. Recruitment of 4th pathologist for fill pending vacancy created by retirement

Toxicology Section

The Toxicology Section performs drug and alcohol testing in Driving Under the Influence cases (DUI or DUID), postmortem cases (assisting the medical examiner/coroner system in the determination of cause/manner of death), urinalysis testing (Department of Corrections probation/parole system and drug endangered children cases), and sexual assault cases. This section also oversees the breath alcohol calibration program, including maintaining and certifying the breath testing instruments used to detect the presence of alcohol in DUI cases. Section staff also provide over 300 hours of training per year to law enforcement, judges, prosecutors, and defense attorneys.



This report contains graphs/figures used to track the results on cases submitted by many agencies throughout Montana. This is not an exhaustive list of drugs detected and confirmed by the Lab; simply the most frequently confirmed drugs.

Staff

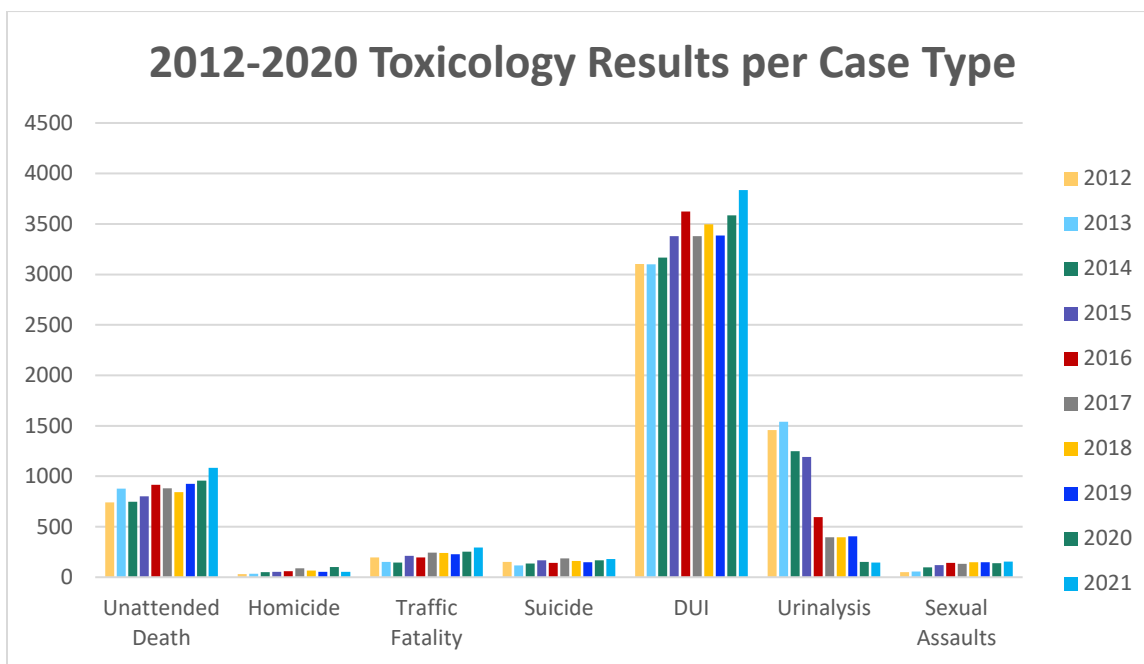
Beth Smalley, M.S., Toxicology Supervisor	April Mitchell, M.S., Forensic Toxicologist
Scott Schlueter, Forensic Toxicologist Diplomate-ABFT-FT	Gavin Lawson, Forensic Toxicologist
Michelle Evans, Forensic Toxicologist Diplomate-ABFT-FT	Elizabeth Holom, M.S., Forensic Toxicologist
Eric Miller, Forensic Toxicologist Diplomate-ABFT-FT	Ben Vetter, Breath Alcohol Manager
Crystal Everett, Forensic Toxicologist	Justin Lyndes, Forensic Toxicologist and Breath Alcohol Toxicologist
Vacant Position	Danielle Klemenko, Toxicology Technician

Successes

1. Validation of 10 new methods, including updates to current methods to provide larger testing scopes and getting three new instruments online
2. Maintained consistent casework output through staff shortages
3. Bringing one new toxicologist and one part-time technician online created assistance to current staff members given an increasing caseload

Challenges

1. Increase in both postmortem (19% increase from 2019-2021) and DUI (12% increase from 2019-2021) submissions and an increase in case complexity, which means more testing is required per case
2. Increase in marijuana testing and positivity rate for DUI cases (42% increase in positive THC/metabolite DUI cases where drug testing is being performed from 2019-2021)
3. The toxicology section has outgrown its space and cannot hire additional staff to help with workload increases until a renovation is complete



2021 Performance Summary

This chart reflects the median turn-around time and average number of cases per toxicologist for both Montana and national averages. It also displays the percentage of cases done within a given timeframe. As the number of case submissions and case complexity increases, the timeframe increases.

<u>Type of Case</u>	<u>95% of cases completed in this timeframe</u>					*2021 Cases per Montana Toxicologist	*Cases per Toxicologist National Average
	2017	2018	2019	2020	2021		
Postmortem	68 Days	68 Days	75 Days	90 Days	74 Days	620	139
DUI Drugs	90 Days	75 Days	77 Days	93 Days	74 Days	304	169
DUI Ethanol	25 Days	27 Days	28 Days	47 Days	25 Days	934	550

*Numbers are based on “**Project FORESIGHT Annual Report, 2020-2021,**” from the Forensic Science Initiative, College of Business & Economics, West Virginia University

Drugs of Interest: It is important to recognize that a drugs presence in a postmortem death does not necessarily mean that it was part of the cause of death. That determination is done by the Medical Examiners and coroners as part of the death certificate.

Methamphetamine: In 2021, there was a substantial increase in the identification of methamphetamine in postmortem cases (212 in 2021, 191 in 2020, and 149 in 2019). Methamphetamine intoxication was listed by the medical examiner as the cause of death in 36 cases and in 23 mixed drug intoxications. It was also found in 31% of all drug driving under the influence cases receiving full drug screens.

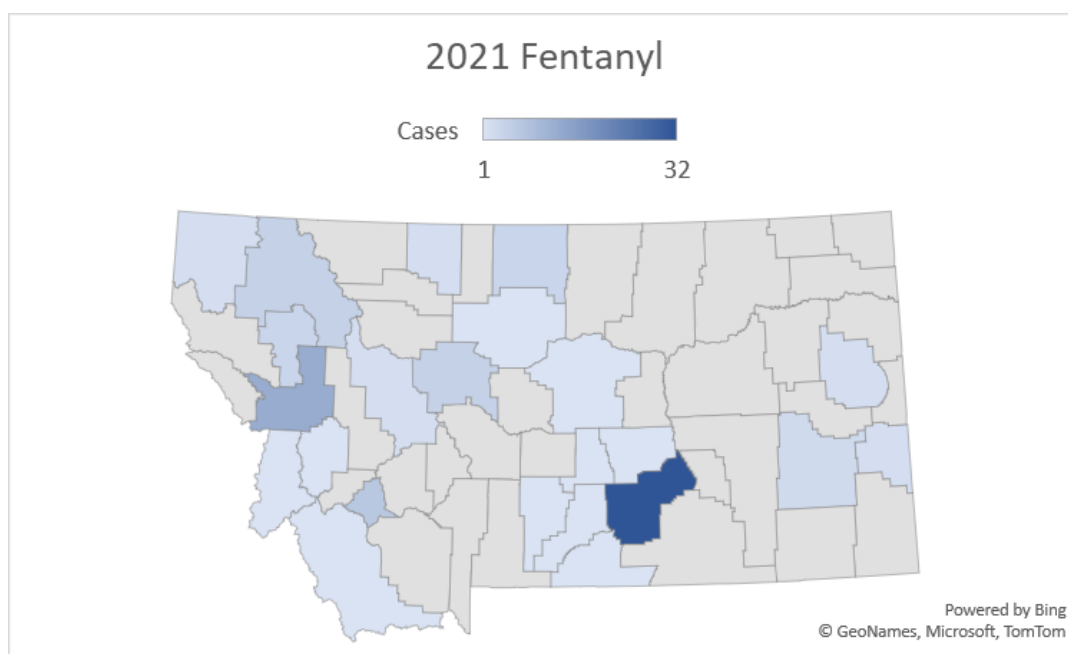
Case Type	2021 Cases	2020 Cases	2019 Cases	2018 Cases	2017 Cases
Postmortem (Blood results only)	212 cases Mean: 0.95 mg/L Range: 0.02- 11 mg/L	191 cases Mean: 1.57 mg/L Range: 0.02*-23 mg/L	149 cases Mean: 1.04 mg/L Range: 0.02*-9.9 mg/L	103 cases Mean: 1.54 mg/L Range: 0.02*-54 mg/L	111 cases Mean: 0.9 mg/L Range: 0.02*-12 mg/L
DUID	500 cases Mean: .38 mg/L Range: 0.02-3.9 mg/L	408 cases Mean: 0.35 mg/L Range: 0.02-3.8 mg/L	302 cases Mean: 0.39 mg/L Range: 0.02-3.0 mg/L	319 cases Mean: 0.35 mg/L Range: 0.02-3.3 mg/L	310 cases Mean: 0.33 mg/L Range: 0.02-2.2 mg/L

Stats from previous years were amended to account for additional postmortem cases that were inadvertently omitted

Fentanyl: While still prescribed and used in hospital settings, fentanyl has flooded the illicit markets. Fentanyl is a synthetic opiate narcotic analgesic and is 40-50 times more potent than heroin. There was a 112% increase in postmortem fentanyl cases from 2020 to 2021 (295% since 2019).

Case Type	2021 Cases	2020 Cases	2019 Cases	2018 Cases	2017 Cases
Postmortem (Blood results only)	87 cases Mean: 12.09 ng/mL Range: 0.5- 117 ng/mL	41 cases Mean: 9.35 ng/mL Range: 0.6*-48 ng/mL	22 cases Mean: 10.97 ng/mL Range: 2.9*-31 ng/mL	15 cases Mean: 13 ng/mL Range: 0.83*-29 ng/mL	10 cases Mean: 6.2 ng/mL Range: 0.6*-16 ng/mL
DUID	57 cases	12 cases	8 cases	1 case	2 cases

Stats from previous years were amended to account for additional postmortem cases that were inadvertently omitted



Tetrahydrocannabinol/THC (Marijuana): Since the passage of the voter approved initiative to legalize use of marijuana, DUI cases testing positive for marijuana, or its metabolites have increased by 17% and 119% since 2017. The average THC concentration in those cases has trended upward since 2017 as well.

Case Type	2021 Cases	2020 Cases	2019 Cases	2018 Cases	2017
DUID	621 cases Mean: 10.11 ng/mL Range:1-172 ng/mL	530 cases Mean: 9.99 ng/mL Range:1-197 ng/mL	464 cases Mean: 9.4 ng/mL Range:1-75 ng/mL	454 cases Mean: 8.6 ng/mL Range:1-160 ng/mL	284 cases Mean: 7.8 ng/mL Range:1-47 ng/mL

Summary of Alcohol and Drug Prevalence in Drivers (including fatal crashes)

*In 2013, a laboratory policy was implemented, determining drug testing in DUI cases only *if requested* and the blood alcohol was less than 0.100 g/100mL. Case reports are released with a note stating that no drug testing was performed, and customers may request testing by contacting the section. This policy continues to be necessary to manage increased workloads and to reduce reporting delays for DUI cases. Cases involving a drug recognition expert (DRE) or a fatal crash are exempt from this policy.

To request quarterly updates of this summary, email michelle.evans@mt.gov.

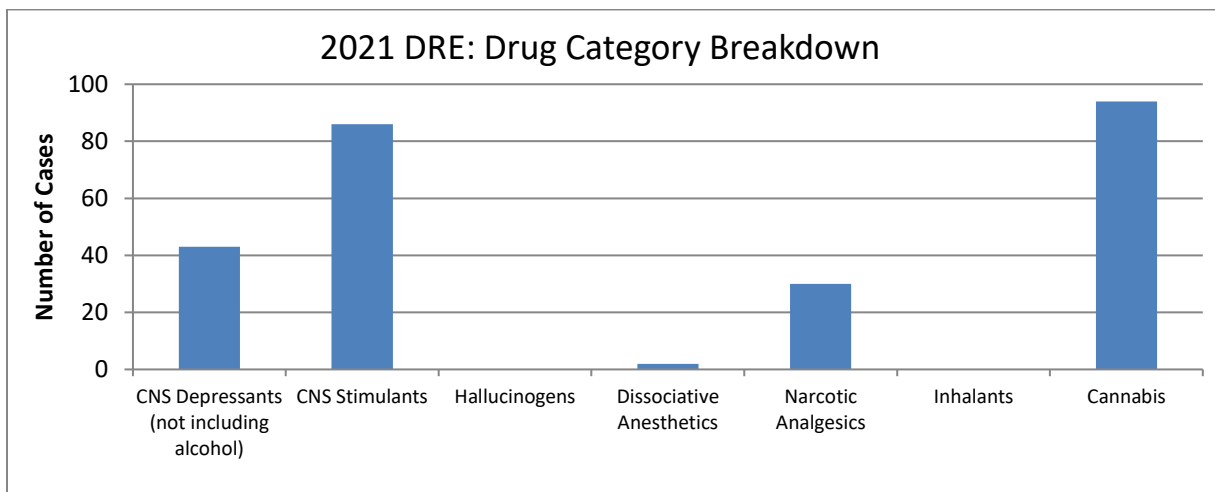
Alcohol and Drug Prevalence in Driver Blood Samples (includes fatal crashes)	
Blood Samples Submitted	4138
Blood Samples tested for drugs other than alcohol (drug)*	1747
Blood Samples Positive for Alcohol	71%
Blood Samples Positive for Drug(s) other than Alcohol*	33%
Alcohol Detected Only*	62%
Alcohol + Drug(s)*	9%
Drug(s) Detected Only*	24%
No Drug(s) or Alcohol Detected	5%
BAC Greater than 0.100%	60%
BAC 0.020% - 0.100%	10%
Average BAC	0.182, Range: 0.010-0.445 g/100mL
Most detected Drugs* --percentages based on total submitted (all) and samples tested for drugs (drug)-	
1. Cannabinoids** – 20% (all), 47% (drug)	
a. THC – 17% (all), 39% (drug) (Avg = 10.4 ng/mL, Range: 1.0–172 ng/mL)	
2. Methamphetamine – 13% (all), 31% (drug) (Avg = 0.411 mg/L, Range: 0.021-4.3 mg/L)	
3. Citalopram/Escitalopram – 2% (all), 4% (drug) We do not currently quantitate this drug	
4. Fentanyl – 1% (all), 4% (drug) (Avg = 5.4 ng/mL, Range: 0.6-34.9 ng/mL)	
5. Lorazepam – 1% (all), 3% (drug) (Avg = 37.2 ng/mL, Range: 2.3-225 ng/mL)	

6. Diphenhydramine – 1% (all), 3% (drug) (Avg = 0.160 mg/L, Range: 0.020-0.88 mg/L)
7. Clonazepam – 1% (all), 3% (drug) (Avg = 0.038 mg/L, Range: 0.02-0.071 mg/L)
8. Diazepam – 1% (all), 3% (drug) (Avg = 0.180 mg/L, Range: 0.024-0.71 mg/L)
9. Alprazolam – 1% (all), 3% (drug) (Avg = 0.070 mg/L, Range: 0.020-0.18 mg/L)
10. Morphine – 1% (all), 2% (drug) (Avg = 0.161 mg/L, Range: 0.022-2.3 mg/L)

**Cannabinoids includes any positive from THC, THC-COOH, or 11-OH-THC

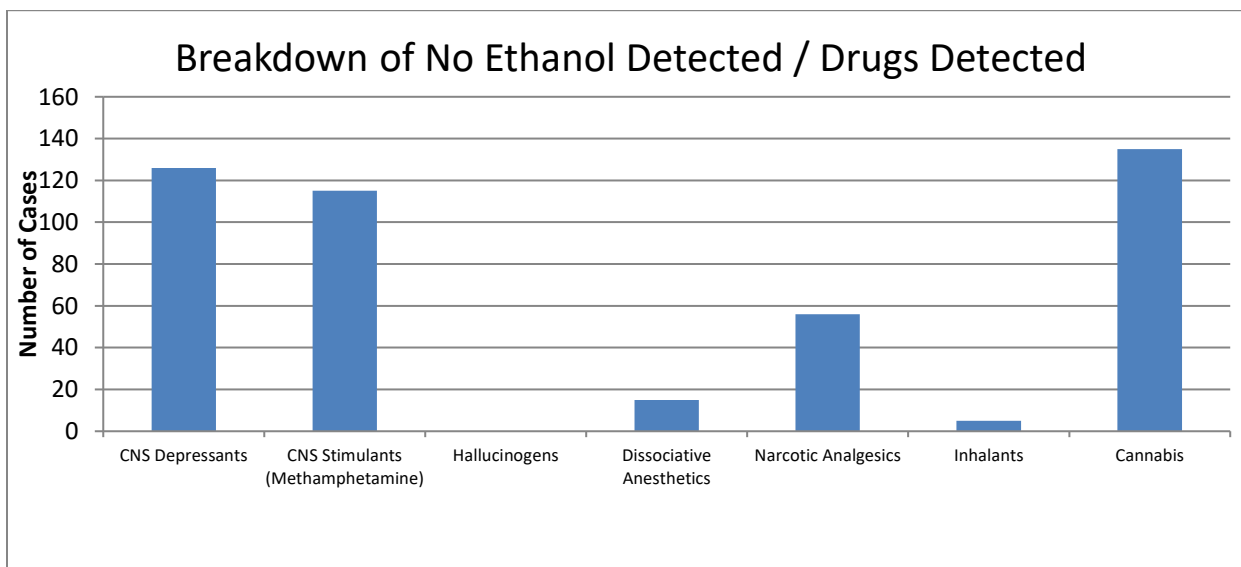
DRE (Drug Recognition Expert) Summary

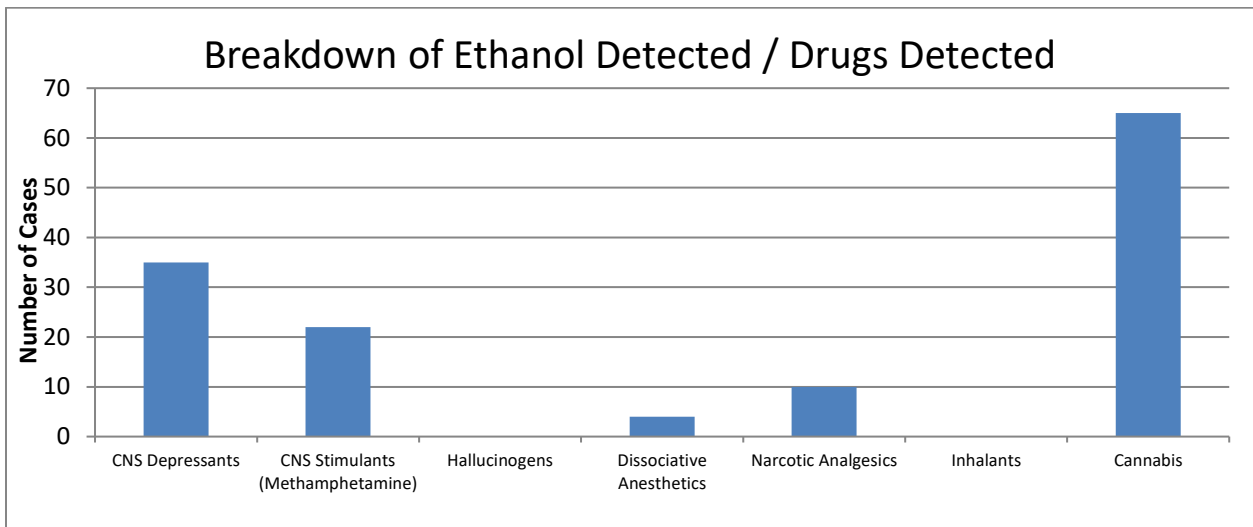
Drug testing is performed on all DRE submitted cases. In 2021, 163 DRE cases were submitted. Some cases may be positive for multiple drugs.



Crash/DUI Summary

The Laboratory received 1,246 vehicle crash cases in 2021. The mean ethanol concentration was 0.186 g/100mL. The mean THC concentration was 7.3 ng/mL. Drug testing was performed on 460 of these cases. Some cases may be positive for multiple drugs. Ethanol is not included in the CNS depressant drug group below.



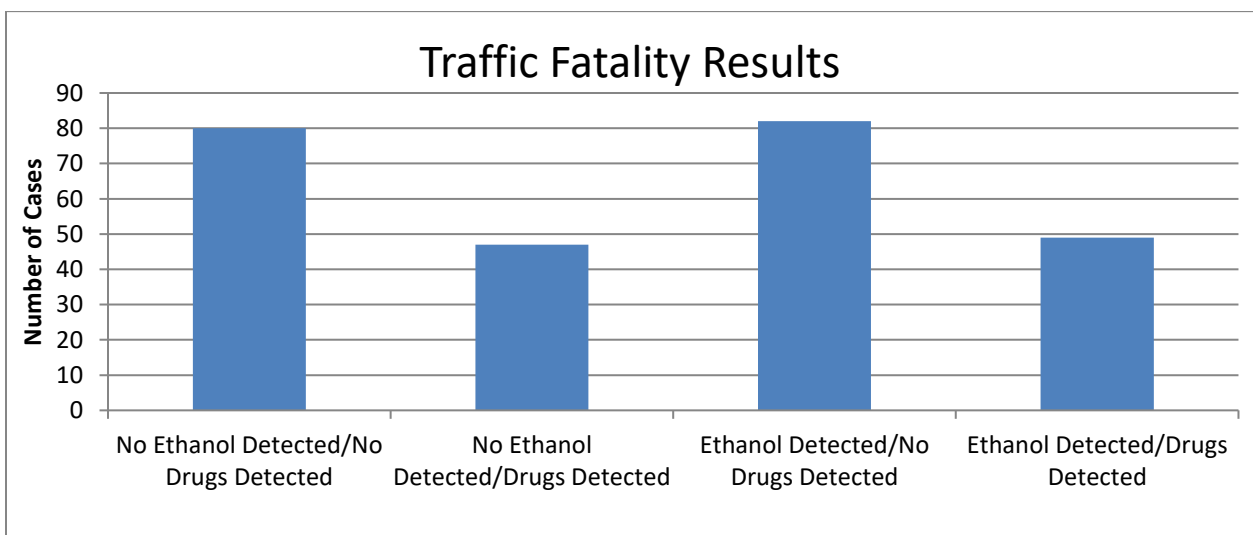


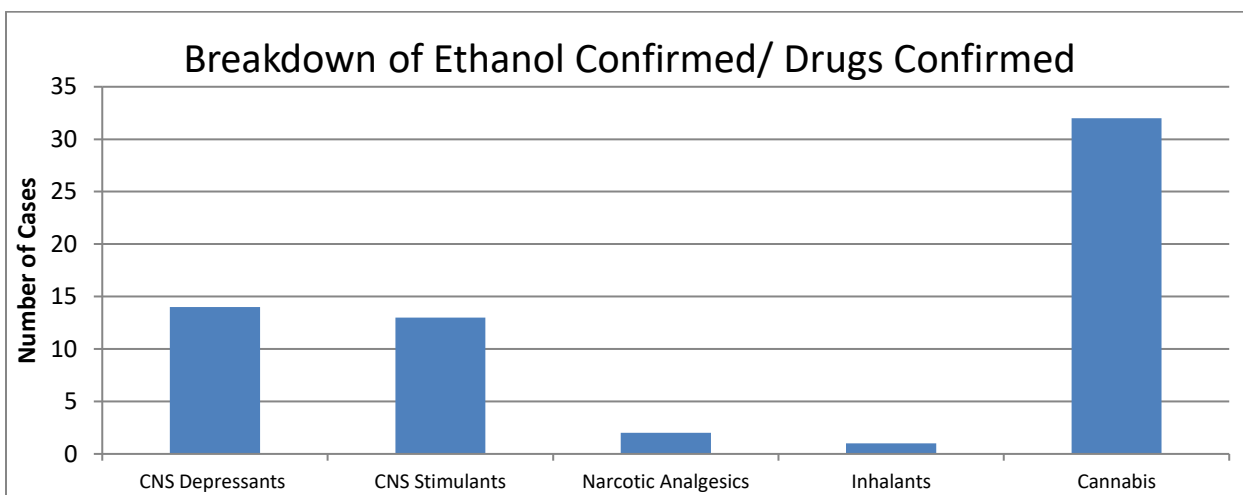
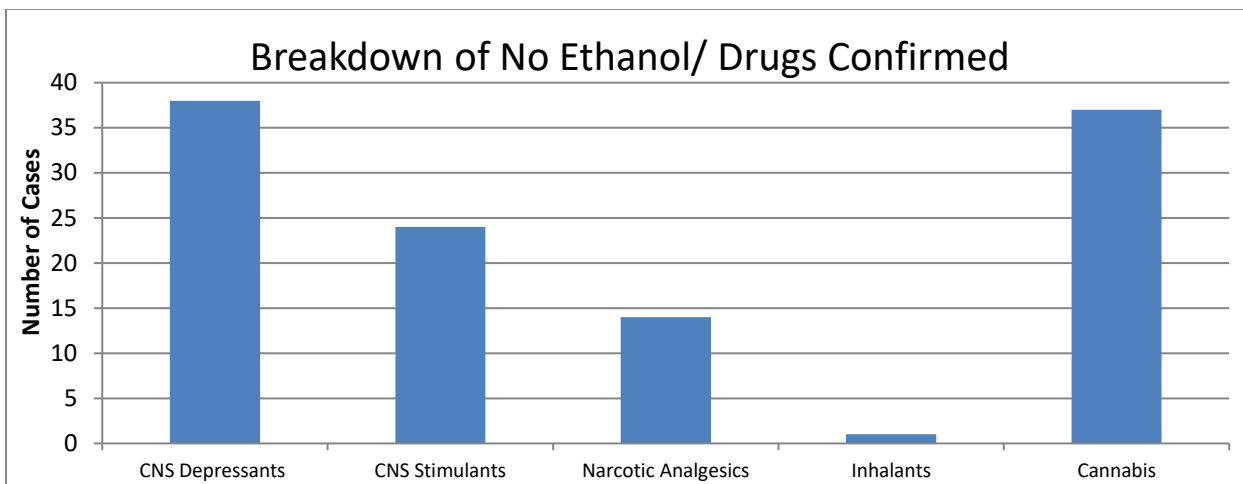
The combination of THC and alcohol poses a significant increase in the risk for impairment, even at low levels. Because these are the state's two most prevalent drugs, we will continue to monitor trends involving the combination. Drug testing is not routinely administered for cases with a BAC above 0.100 g/100mL (traffic fatalities are excluded from this policy).

	Ethanol + THC (NO other drugs)		Ethanol + THC (AND other drugs)	
2019	104	Percent Increase	159	Percent Increase
2020	117	12%	188	18%
2021	127	8%	205	9%

Traffic Fatalities Summary

The Laboratory received 264 traffic fatality cases and performed toxicology testing on 258 cases. There is no distinction between a driver and a passenger in the following data. The mean ethanol concentration was 0.176 g/100mL in cases when it was detected. When it was detected, the mean THC concentration was 13.9 ng/mL. Some cases may be positive for multiple drugs. Ethanol is not included in the CNS depressant drug group below.





Breath Alcohol Summary

Throughout 2021 the Breath Alcohol Section worked on testing the Intox 9000 software and it went through many revisions (currently version 52). A version was ultimately approved for field testing at the end of 2021. Manuals for the instrument were updated for senior operators and operators and regional trainings were scheduled for the first part of 2022 with a “go live” date of July 1, 2022. The two analysts worked on certifying all the Intox 9000’s for the 2022 rollout. The rollout of the new instrument provides for the ability to capture multiple subject sample results from a single breath sample. It will be in more locations and will result in multiple efficiencies to the Section, including data collection and the annual certification process.



The Section has three main duties it performs regularly. The first is the maintenance, repair, and calibration of all breath analysis instruments. These instruments are given to local, county, state, and federal law enforcement agencies statewide. Montana Administrative Rules require the return of all instruments to the Laboratory at least once a year for annual certification, which returns the instruments to above factory standards using the most modern forensic techniques available.

The second duty of the Breath Alcohol Section involves the training and recertification of all law enforcement officers. As part of their Montana Law Enforcement Academy requirements, all officers must pass a comprehensive 40-hour course in DUI detection, arrest, and processing. Officers from all types of law enforcement agencies, including local, county, state, and federal attend these courses. They include basic alcohol pharmacodynamics and pharmacokinetics, breath analysis instrument infrared theory and operation, and standardized field sobriety testing (SFST). All students are exposed to live alcohol dosed individuals for ‘real world’ hands-on training and must pass a written and practical test. This course typically has nearly 50 students and is offered at least five times each year. After achieving this level of certification, all officers must get recertified annually to maintain their DUI certification status. The first training class at the new Montana Highway Patrol Headquarters was conducted and went without a hitch. The section is looking forward to performing more trainings at this new facility.

The Section’s third responsibility is to teach various groups across the state about breath alcohol testing, including prosecutors, defense attorneys, and judges. Additionally, Section personnel testify in court, for both the prosecution and the defense, in city, justice, district, and federal courts across Montana.

Chemical Analysis Section

The Chemistry/Trace Unit analyzes controlled substances, suspected clandestine laboratory evidence, and gunshot residue casework. Forensic chemists analyze samples seized in cases involving dangerous drugs and clandestine labs, including the identification of previously unseen analogues now flooding the recreational drug market. The increase in fentanyl/fentanyl analogues and designer cases have increased case complexity. Since 2011, submissions to this section have more than doubled.



Staff

Misty Icard Chemistry Supervisor – Billings ABC Board Certified	Bahne Kliez Forensic Chemist – Missoula ABC Board Certified
Josh Williams Forensic Chemist – Billings ABC Board Certified	Amber Trochta M.S. Forensic Chemist – Missoula
Brook Knapp M.S. Forensic Chemist – Billings ABC Board Certified	Travis Doria Forensic Chemist – Missoula ABC Board Certified
Tanna Brown Forensic Chemist – Missoula ABC Board Certified	Alyssa Stulz Forensic Chemist – Missoula ABC Board Certified

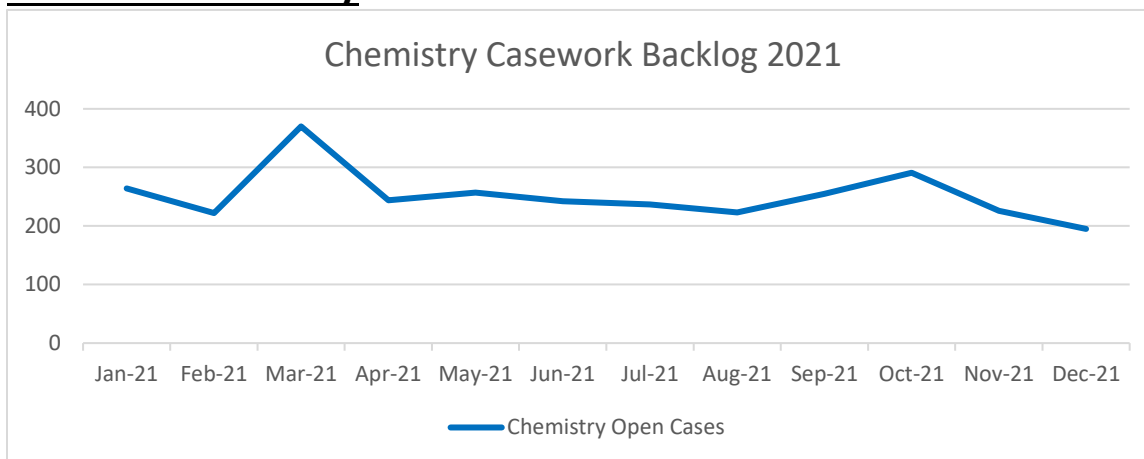
Successes

1. Maintained a 30-60 day turnaround time
2. Second analyst trained in Gunshot Residue analysis
3. Continued to simplify and streamline section policies

Challenges

1. Maintaining current turn-around times in the midst of new staff members in training and staff members on family leave
2. 500% increase in fentanyl related submissions FY2021
3. Increased in person testimony
4. Increase in submissions (fentanyl analogues) where current instrumentation is not sensitive for low concentrations and time inefficient

Casework Summary



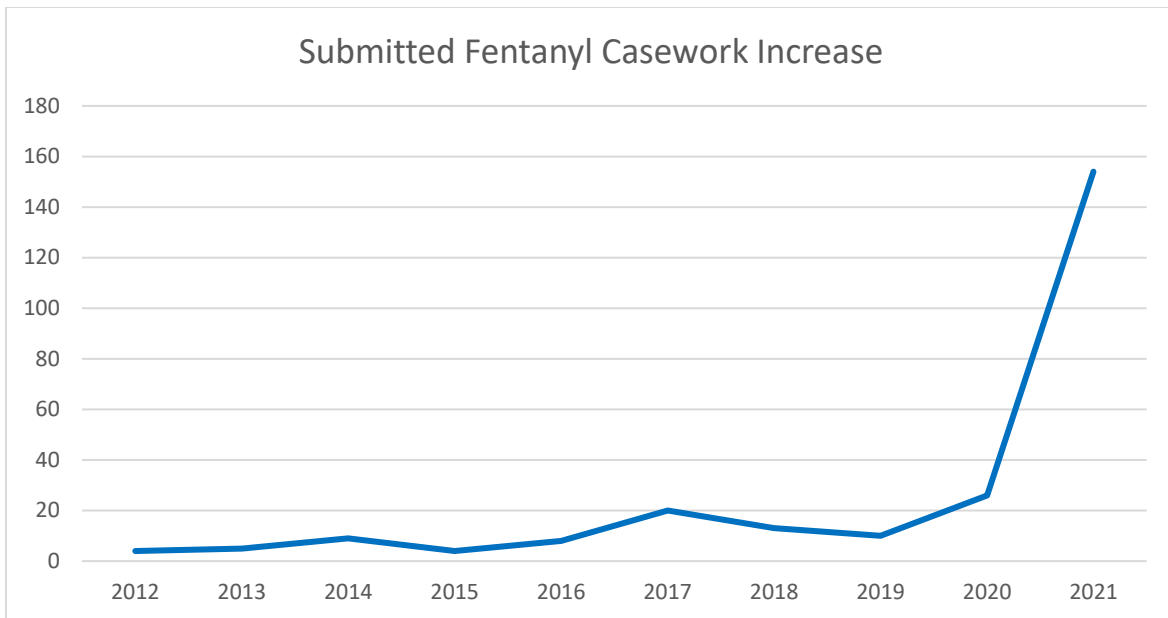
Year	Number of Cases Submitted Missoula/Billings/Outsourced	Samples Analyzed	Beginning Year Backlog (Cases)	Turnaround Time for Year (Days)
2011	1375	1961	346	60
2012	1577	2149	320	104
2013	1348	1819	627	162
2014	1482	1854	1240	224
2015	2221	2772	1051	120
2016	2024/565	3392	560	67
2017	2047/911	3947	366	31
2018	1434/1323/2	3721	370	175
2019	1096/1239/264	3132	1528	195
2020	1114/754/826	3578	1747	141
2021	2084/862	4087	332	24



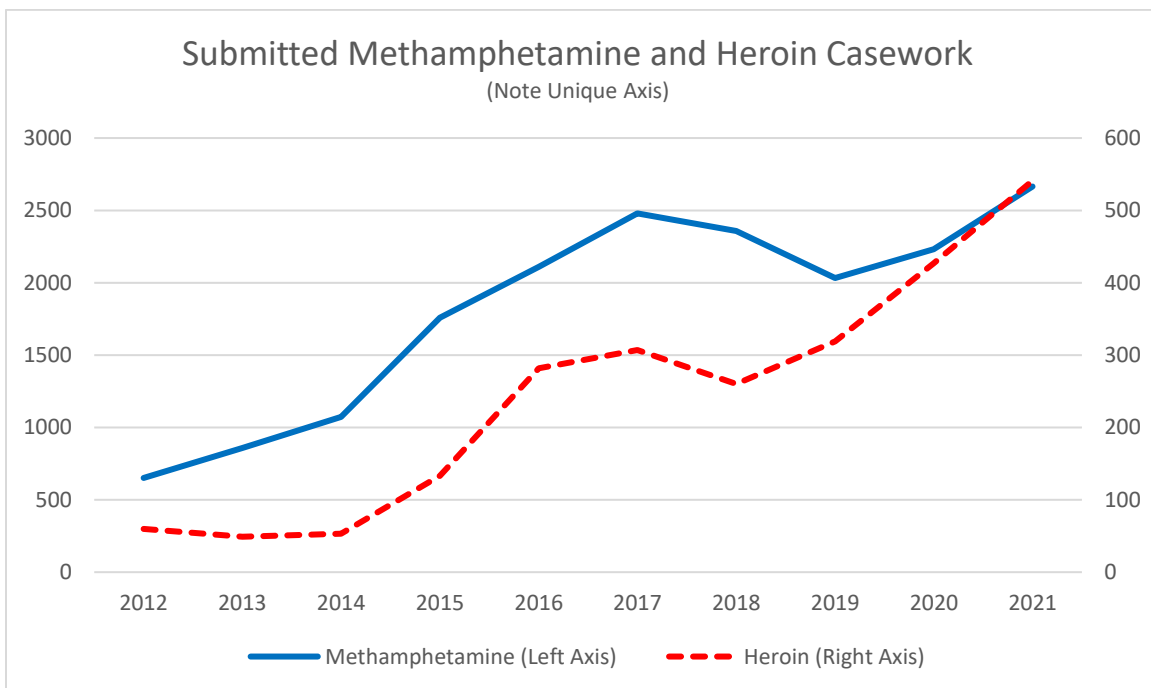
Forensic Chemist Travis Doria analyzes controlled substances in the Chemical Analysis Section.

The Chemistry Section has seen a drastic increase in the prevalence of fentanyl found in samples submitted for testing. There has been an approximate 500% increase over the past

year and approximate 1400% increase since 2019. The lab has taken precautions to ensure the safety of our staff by making sure that there are additional staff present during testing or support staff is notified to monitor the chemistry staff by way of security cameras installed in the section. To date there have been no exposure incidents from fentanyl by staff.



Along with Fentanyl, Methamphetamine and Heroin continue to increase. Methamphetamine submissions increased by approximately 20% since 2020 and Heroin submission increased by approximately 27%.



Latent Print Evidence Section

The Latent Print Evidence Section analyzes evidence for the presence of latent fingerprints. Staff then compares them to known prints when possible. The Lab utilizes both a regional and federal Automated Fingerprint Identification System (AFIS), databases for the search and registration of unidentified latent impressions and the retrieval of known fingerprints.



Staff

Kaitlin Delphy Supervisor Latent Prints/Firearms/Evidence (February 2022) IAI Board Certified	Stephanie Shappee Forensic Scientist IAI Board Certified
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Successes

1. Section has continued to keep up with casework in the year following the last outsourcing efforts.
2. VMD is online and being used in casework. VMD has successfully developed latent prints, some subsequently identified, in several cases.
3. Procured updated integral equipment based on recommendations from external consultant.
4. Effectively managing multi-section cases and coordinating efforts to expedite multi-section analysis between sections.

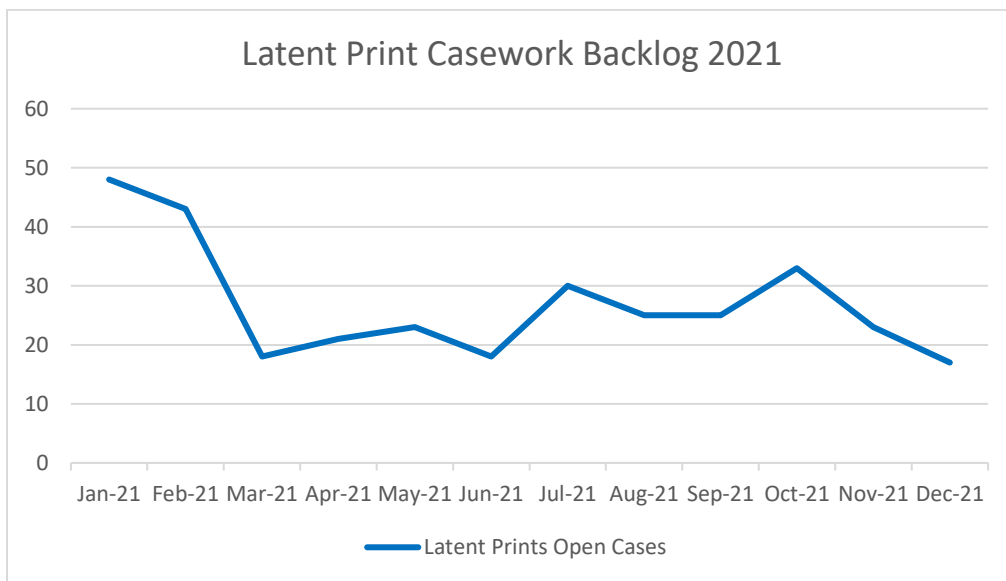
Challenges

1. Verification/validation of new equipment has been time consuming.
2. Supply shortages are currently impacting latent print reagents utilized in daily casework, as well as other more specialized technology the section is hoping to acquire.

Casework

Due to the efforts of the previous years, there were no cases outsourced from the Latent Print section. As the final outsourced reports from the contracted laboratory were received in early 2021, some additional casework related to the outsourcing efforts (e.g. the entry and automated search of AFIS quality impressions returned by the contracted laboratory) was completed in 2021. There was a 16% increase in Supplemental Analysis requests (submittal of additional known impressions for comparison, submittal of additional evidence for processing, identifications resulting from AFIS entry, etc.) and while this is currently a small percentage of the total latent print cases received annually, this positive trend is expected to continue. The effort of the analysts in the section is to maintain the incoming cases as to not increase the backlog given the significant decrease from the previous outsourcing efforts. A Vacuum Metal Deposition Chamber was validated for casework in 2021. This instrument allows for the processing of a wide range of substrates, including those often considered complex or that don't often result in latent print development with other, more routine methods.

Year	2021	2020	2019
Total cases submitted	181	240	164
Total cases completed	230 No outsourcing	188 184 cases completed in-house 4 cases outsourced	323 152 cases completed in-house 171 cases outsourced
Median TAT (days)	24	68 (in house cases)	45 (in house cases)
95% of cases worked (days)	167	307 (Due to clearing out historic cases)	1,043 (Due to clearing out historic cases)



Biology Section

The Biology Section provides quality, accurate, and timely analysis of evidence for the presence of biological fluids and further characterization of those samples using state of the art DNA technologies. In addition, the Missoula laboratory administers the FBI CODIS program and processes all convicted offender database samples for the State. Lastly, the section staff testify at trials regarding analysis conclusions.

Joe Pasternak, Biology Supervisor and DNA Technical Leader
Megan Ashton, State CODIS Administrator
Jamie Bray, DNA Analyst
Andrew Zeigler, DNA Analyst
Jen Revis-Siegfried, DNA Analyst (part-time)
Lacey Van Grinsven, Serologist/Y Screening
Andrew Bishop, DNA Analyst
Rachel Beddall, Serologist/Databasing
Kate Kulgavvy, Serologist/Y Screening
Kendra Henning, Y Screening Analyst
Steven Antonich, DNA Analyst
Haley Fallang, DNA Analyst (April 2022)



Successes

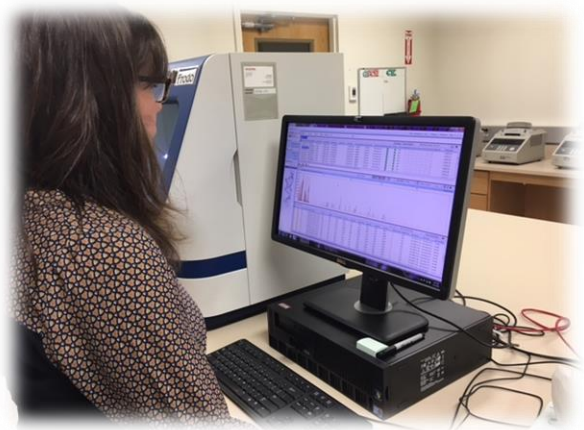
1. **40%** reduction in backlogged DNA cases amidst staffing challenges
2. Five analysts sat for American Board of Criminalistics certification tests
3. Cross-training two analysts for resiliency
4. Maintained low turn-around times for Y-screening and Serology caseloads
5. Successful DNA FBI Quality Assurance Standards annual assessment
6. Completion of Y-STR Validation. Start-up date March 2022

Challenges

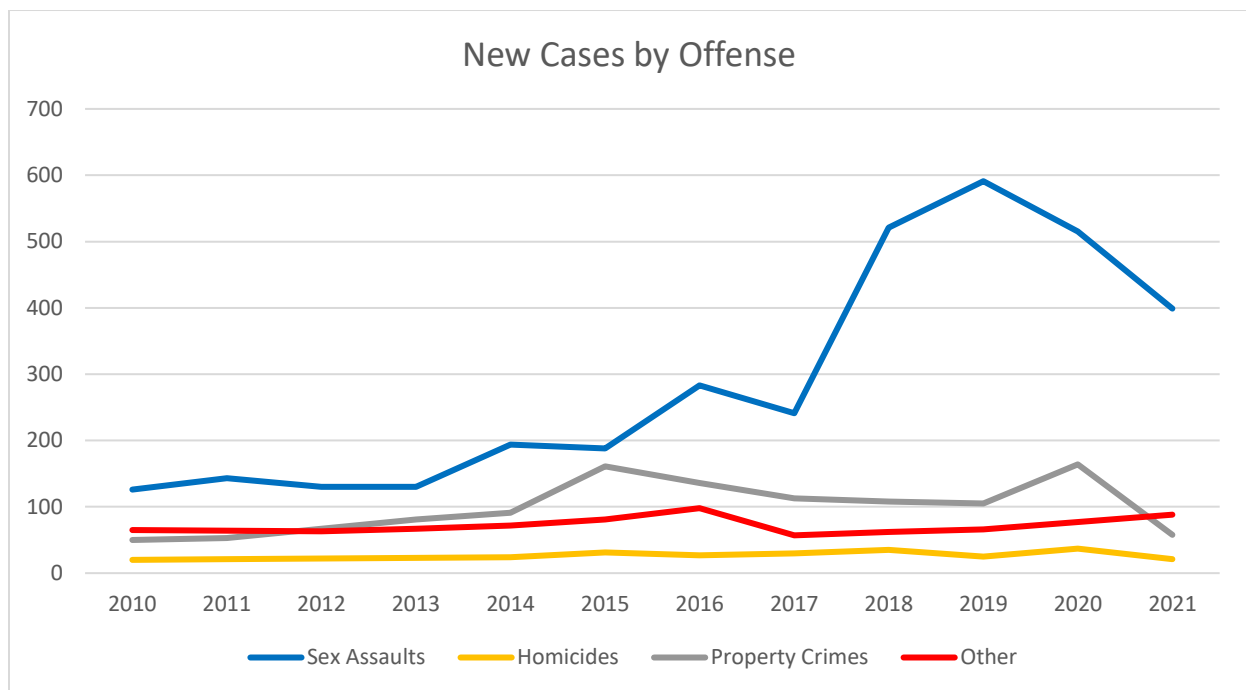
1. Two analyst departures
2. Two staff member extended leaves
3. Increased incidence of body identifications requiring DNA

Annual Case Submission

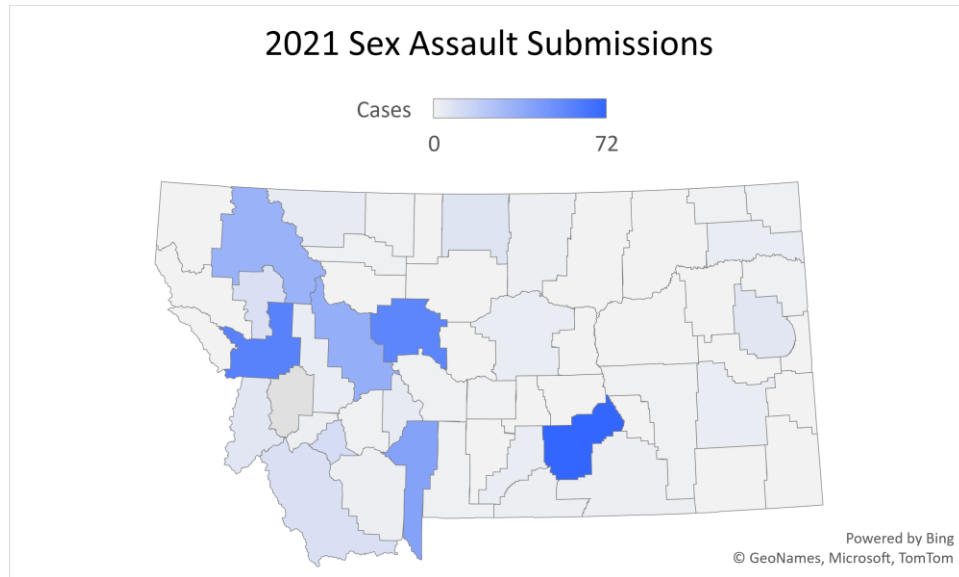
In 2021, the Division moved to convert two of the DNA Technician positions into DNA Analyst positions to improve resiliency to staffing fluctuations. In addition, the DNA analysis process is performed using a team approach. By using this approach, the section can more efficiently process samples than that of analysts processing individualized case batches. These improvements have resulted in a 40% reduction in cases awaiting DNA analysis equating to a decrease in time to delivery of results to requesting agencies.



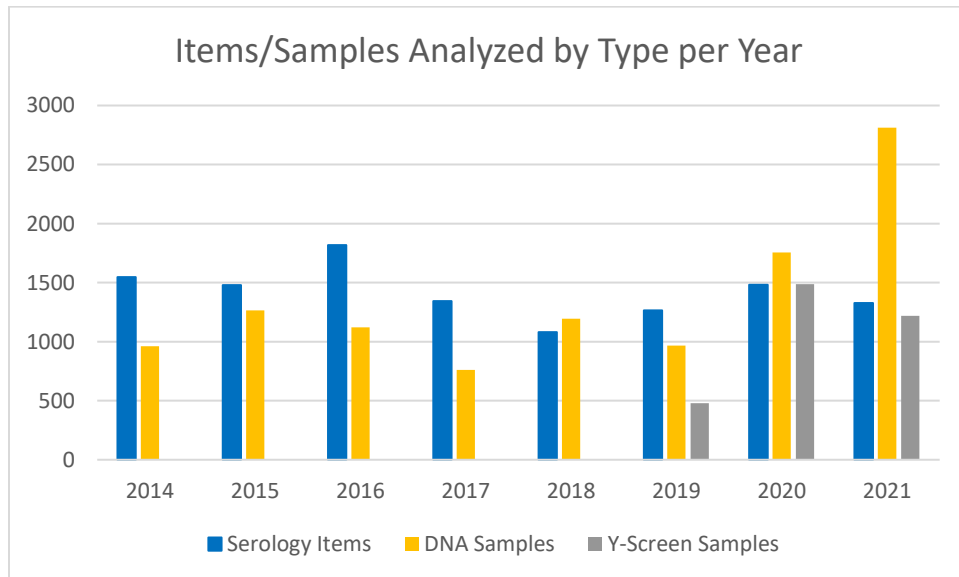
DNA Analyst Jamie Bray works on DNA profile data at the State Crime Lab.



Following an increase in sexual assault submissions from 2016 through 2018 resulting from the Sexual Assault Kit Initiative and passing of State Bill 52, sexual assault submissions have leveled off moving into 2022. Below is a map showing the sexual assault submissions by county.

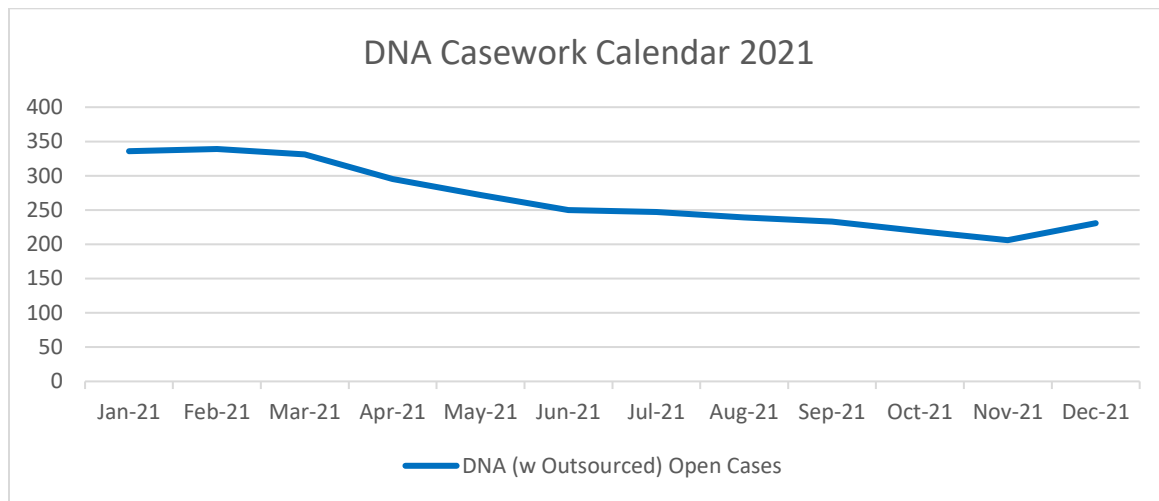


Most case submissions consist of multiple items or samples requiring analysis. This chart represents the volume of items and samples worked by type each year.



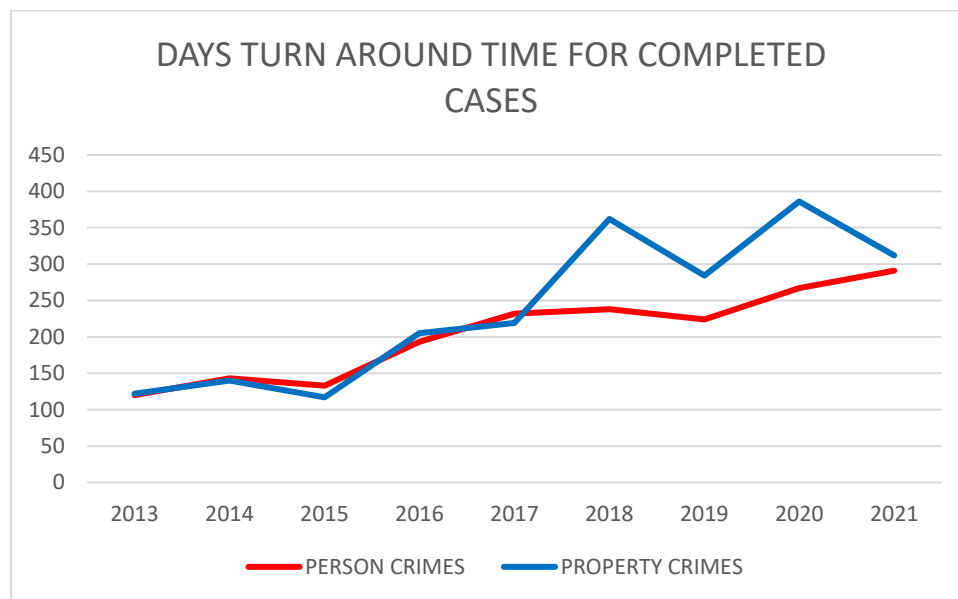
Processing of DNA sample increased 60% in 2021 as compared to 2020. This directly correlates with the decrease in backlogged DNA cases. Serology items and Y screening samples decreased as the initial effects of SB52 level off. Y screening of sexual assault kits was initiated in mid-2019.

DNA Backlogged Cases



The number of outstanding DNA requests has been steadily on the decline over the course of 2021.

Turnaround Times



As Biology case are completed, the turn-around times posted reflect the total time the lab has had the request for Biology analysis. Over the course of the next year, the turn-around times are expected to decrease more sharply as the total number of open cases is reduced and completion time decrease further.

CODIS

The CODIS database allows forensic laboratories throughout the nation the ability to compare DNA profiles from one case to another and also to known convicted offenders from each state. Annual Forensic Unknown profile entries continue to increase with a correlation of CODIS HITS. Each HIT is an investigative lead.

CODIS Totals – Casework and SAKI

	2021	2020	2019	2018	2017
Casework Forensic Unknowns	243	189	71	124	105
SAKI Only Forensic Unknowns	N/A	15	237	129	N/A
Total Profiles Entered	243	204	308	253	105
CODIS HITS	92	86	140	138	31

Firearm/Toolmark Section

The Firearm/Toolmark Section examines firearms and ammunition from crime scene evidence. In addition, its staff examines toolmarks by request. They can determine whether a bullet was fired from a particular gun, and whether a particular tool was used at a crime scene. Within a certain range, they can estimate the distance between a gunshot victim and the gun.



Staff

Lynette Lancon Forensic Scientist AFTE Certified	Doug Lancon Forensic Scientist (Transferred February 2022)
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Successes

1. Maintained casework and turnaround time with staffing changes.

Challenges

1. Maintained casework and turnaround time with staffing changes.
2. Prioritized cases based on trial and investigative needs

Casework

The transition of a new administrator caused the Firearm/Toolmark Section to be short staffed for a long period of time during 2021. The large majority of casework was performed by one analyst with the second analyst serving as interim administrator and eventually hired in that position. In the first part of 2022 a current employee with a firearm/toolmark background was transitioned into the section. This eliminated the possibility of hiring an untrained examiner that would come with a two-year training period.

Year	2021	2020	2019	2018	2017
Total cases worked	88 (970 items of evidence worked)	90 (2112 items of evidence worked)	65 (597 items of evidence worked)	89 (1,212 items of evidence worked)	87 (978 items of evidence worked)
Median TAT (Days in Firearms section)	33	46	25	21	21
95% of cases worked (Days in Firearms section)	124	95	73	77	156

Quality Assurance

The Quality Assurance Section maintains the Forensic Science Division's accreditation and continually improves its management system. The quality assurance manager is responsible for ensuring the management system as it relates to quality and safety is implemented and followed at all times. This includes ensuring compliance with ANAB and NAME accreditation requirements [ISO/IEC 17025 and AR 3125] and the Forensic Science Division policies.



Staff

Stacey Wilson

Quality Assurance Manager

Successes

1. Revisions to internal audit plan and schedule has reduced the amount of time staff members are involved and the requirements to be assessed annually.
2. Sustaining ANAB accreditation requirements for laboratory testing and calibration activities.
3. NAME full accreditation for Medical Examiner's Office achieved in June 2021 after on-site inspection.
4. Continuation of incorporating quality assurance/quality control processes in Qualtrax [more efficient and mostly paperless].

Challenges

1. Completion of ANAB surveillance document review and addition of Y-STR analysis to accreditation scope summer of 2022.
2. NAME annual verification December 2022.
3. Laboratory testing and calibration activities re-assessment by ANAB summer of 2023.

Evidence Section

The Evidence Section ensures evidence is accurately and efficiently transferred to maintain the integrity of all evidence submitted and to protect it from loss and cross contamination.

Staff

Alysa Nichols Evidence Technician - Missoula
Samantha Hoyt Evidence Technician - Missoula
Marina Contreras Evidence Technician - Billings



Casework

In 2021, the evidence technicians processed 9156 cases. Most of them have multiple pieces of evidence, some totaling over one hundred individual items. It is an essential and often overlooked role within the Division to document, log, and track the tens of thousands of unique pieces of evidence submitted each year.

Successes

1. Provided three evidence training presentations at MLEA.
2. Digitizing old submission forms for easier accessibility

Challenges

1. Increase in fentanyl cases cause increased risk of evidence technicians as they perform the intake of evidence into the lab