## 2.0.2.2 ASCLD SYMPOSIUM Facing the Challenge: Mission Possible



© 2022 Signature Science, LLC

## **The Post-Pandemic Laboratory** Balancing the Rise of the Remote Workplace

#### Alicia M. Cadenas

Forensic DNA Analyst acadenas@signaturescience.com



## **Overview**

- Introduction to Signature Science
- Pre-Pandemic Laboratory Status and Shifts in 2020
- Remote Analyst Recruitment
  - Training
  - Communication
  - Casework Processing
- Post-Pandemic Status
- Post-Pandemic Considerations and Current Outlook

## Introduction to SigSci

### **Introduction to Signature Science**

 $\stackrel{\frown}{\propto}$ 

2001

Founded in March 2001 as a subsidiary of Southwest Research Institute. 2011 2013

Began human DNA research and testing

ANAB accreditation of the Austin, TX casework laboratory Accrediting the Forensic Genetic Genealogy laboratory based in Charlottesville, VA

2022

LOCATIONS Austin, TX (Headquarters) Atlantic City, NJ • Arlington, VA • Charlottesville, VA



## **Pre-Pandemic Laboratory Status and Shifts in 2020**

## **The Pre-Pandemic DNA Casework Laboratory**

- Staff
  - 7 DNA Analysts
  - 1 Technician
  - Fully on-site
- Homemade LIMS
  - Utilized Excel macros
  - STACS-CW purchased and in development as of 2019
- Hard copies + scanning of final documents to client



## **Pandemic Shift in Corporate Policies**

- Reduced the density of staff in the office
  - Some divisions with staff who could work offsite went 100% remote (e.g., purchasing and contracts, QA/data science, bioinformatics)
  - Some divisions were too tied to the laboratories to work 100% remote (e.g., forensic DNA lab, chemistry, engineering)
    - These staff worked remotely when they could (report writing, technical reviews)
    - Leveraged Microsoft Teams for meetings in lieu of in-person meetings
- Instituted strict mask mandates on site
- Added janitorial services to increase cleaning frequency with extra focus on commonly touched surfaces (door handles, kitchen areas)
- Health and Safety staff became very involved in managing exposure risk and return to work status of all employees on site



## **Polling question**

- What is your organization's current work from home policy?
  - a) We implemented other policies (e.g. flex schedules) that did not include work from home and do not have a work from home policy
  - b) We allowed work from home during the pandemic and are keeping the option post pandemic
  - c) We allowed work from home during the pandemic and have since eliminated the option
  - d) We allowed work from home during the pandemic and have not made any decisions yet on our post pandemic policy



## **STACS-CW LIMS Implemented in August 2020**

- Benefits
  - Removed sharing of paper casefiles between analysts (helpful in the pandemic world)
  - Streamlined traceability



- Barcode scanning of samples through the entire examination process
- Increased efficiency
  - Eliminated printing and scanning
  - Eliminated manual tube verification
  - Integrated report template module
  - Integrated Technical/Administrative Review checklists
  - Discovery documents compiled automatically
- Integration with current instrumentation
  - QIAcube, EZ1, QIAgility, 7500, 3500

Tune in on Thursday for Leslie Parke's in-depth presentation on SigSci's migration to STACS-CW



## **The Paperless Laboratory – Other Considerations**

- Electronic signatures outside of LIMS
  - Continuing Education forms
  - Proficiency Test forms
  - SOP Acknowledgement forms
- Electronic Training documentation
- Changes to methodology/format for submissions to clients
- Adjustment to individual processes that involved pen and paper
  - Touchscreen laptops and wireless pens
  - Adobe Acrobat

E Backspar	Delete
PAP	RLESS
Shift	



## **Pandemic Shift – DNA Casework Laboratory**

- Improved efficiency of writing, tech review and admin review from home
  - No more shuffling hardcopy casefiles back and forth to the lab
  - Central location in STACS-CW for tracking simplified locating information outside of the physical laboratory
    - Sample history reports
    - Consumable reports
    - Instrument reports
    - Audit history reports
- Increased efficiency in submissions to client
  - Eliminated need to scan paper casefiles
  - Eliminated the audit of the scan
- Paved the way for hiring remote analysts



# Remote Analyst Recruitment

Training, Communication, and Casework Processing

## **Remote Analyst Recruitment**

#### Benefits

- Larger hiring pool
- No relocation requirement
- Lower overhead costs (can expand staff size without increasing office footprint)
- Experienced analysts
  - Interpretation including probabilistic genotyping
  - Testimony
- Streamlined training
  - Faster turnaround time from hiring to casework authorization



First remote SigSci analyst hired February 2021 Two more hired in June 2021 One more hired in January 2022 One on-site analyst transitioned to remote in March 2022



## **Remote Analyst Training**

- Modified Training
  - Tailored to the analyst based on their experience
    - Multiple DNA profiling systems
    - Autosomal STR and Y-STR
    - Manual Interpretation and Probabilistic Genotyping (STRmix<sup>™</sup>)
  - Focused on data analysis, interpretation and reporting
    - Training on lab work processes including a week onsite for observation and understanding
      - Extraction, Quantitation, Amplification, CE
    - No competency requirement on *performing* the lab work process



## **Training Program Example**

- Already competent and proficient in:
  - Serology and DNA Analysis
  - PowerQuant and Quantifiler Trio/7500
  - Autosomal STR
    - PowerPlex Fusion 6C/3500
    - GlobalFiler/3500
    - 24plex/3500
  - Y-STR
    - PowerPlex Y23/3500
    - Yfiler Plus/3500
  - Manual Interpretation
  - STRmix

- SigSci
  - Serology and DNA Analysis
  - Quantiplex Pro/7500
  - Autosomal STR
    - GlobalFiler/3500
    - 24plex/3500
  - Y-STR
    - Yfiler Plus/3500
  - Manual Interpretation
  - STRmix



## **Training Program Checklist**

- Corporate Training (~1 week)
- Required readings
  - SOPs
  - Validations
  - Casefile Review
- Virtual observations with qualified analysts
  - STACS-CW
  - Data interpretation
  - Report writing
- On site training in Austin (1 week)
  - Laboratory observations –from screening to CE
- Competency exams for each component



#### **Competency Exams**

Quant Evaluation for male screening Data Analysis in GMID-X Manual Interpretation/Reporting STRmix analysis/Reporting Written Examinations Final Competency exam



## **Training Program**

#### Additional training

- Technical Review authorization
- Serology reporting and technical review
- Optional can prioritize training based on lab needs:
  - One DNA profiling system (e.g. GlobalFiler) with additional systems added later
  - Manual interpretation with probabilistic genotyping added later
  - Autosomal STR with Y-STR training added later
- Average training time for experienced analyst:
  - On-site analyst 12-14 weeks
  - Remote analyst 6-8 weeks



## **Casework Processing**

- Technician-based approach depending on client needs
  - Qualified individuals perform laboratory processing
  - DNA Analyst takes ownership of the case
    - Review of all laboratory processing documentation
    - Data analysis and interpretation
    - Reporting
  - If performed, serology report will be issued by individual performing it
    - As needed, separate Serology and DNA reports may be issued
  - Cases from each client are worked in batches (~40 cases) with an assigned Batch Lead
    - Both on-site and remote analysts can serve as batch lead
    - Plan and monitor the progress of cases through the laboratory
    - Ensure cases are on track to meet due date for reporting



### **Casework Processing – Remote Integration**





## **Communication Channels**

- Communication Platform (i.e. Microsoft Teams, Slack)
  - Streamlined communications with Group channels
    - Schedule updates on personnel availability
    - Analysts discuss interpretation or problem samples
    - ID-X updates on shared remote connections/availability
    - STRmix updates on shared remote connections/availability
    - Lab updates to laboratory needs
    - Instruments updates to instrument status
    - Random everything else
  - Private channels for one on one or small group communications
  - Fewer emails
  - Integration with video meetings
  - Integration with phone eliminates need for physical line





## **Pitfalls**

- Have an internal system of when to use Teams and when to use email
  - Official communication policy changes, feedback – should be via email
- Don't let it become a distraction
  - Too many group channels
  - Encourage Do Not Disturb status as needed
- How can we promote team building and sharing but keep distractions to a minimum
  - Move topics to the lab meeting agenda when the discussion becomes lengthy
  - Specify a day for sharing (Furry Family Friday)





## **Communication Channels**

- Virtual meetings
  - Biweekly forensic laboratory meetings
  - Monthly technical story time
  - Additional meetings as needed for specific topics
- Continued emphasis on productivity is key
  - Keep meeting agenda focused
  - Set a time limit
  - Keep meeting frequency at a level that is productive
  - Discourage doing other activities when calling in to meetings





## **Other Remote Tasks and Benefits**

- Other ways to leverage the experience of your remote staff
  - Validation assistance/champions
  - QA/QC review and approval
  - Internal Audits
  - Staff Mentoring
  - New ideas from diverse experience/backgrounds



## **Challenges Encountered**

- Remote connection to GMID-X painfully slow access and performance
  - Main network on Windows 10, GMID-X host and clients on Windows 7 resulting in network latency when accessed via VPN
  - Solution: create a Windows 10 VM network for GMID-X host and clients
    - Speed was improved by ~50%
    - Achieved better security and compliance with main network
- Establishing expectations for the Remote Analyst
  - On one hand, easier to evaluate since responsibilities are standardized
    - Fewer interruptions compared to being on-site
    - Role can be focused on reporting writing and technical review
  - On the other hand, needed some time to evaluate what was reasonable



## **Post-Pandemic Status**

### **Post-Pandemic DNA Casework Laboratory**

- Policy change: Effective February 2022 Work From Home (WFH) for on-site staff discontinued
  - Distribute mentoring/troubleshooting activities across all DNA Analysts
  - Maintain good team dynamics, especially with new staff joining the lab
  - Maintain high productivity in the laboratory



## **The Post-Pandemic DNA Casework Laboratory**

#### Staff

- 5 Remote (4 full time, 1 part time)
  - 3 new hires with 10+ years of DNA casework experience
  - 1 on-site DNA Analyst transitioned to remote
  - 1 company employee internally transferred as part-time DNA Analyst
- 16 On-Site
  - 7 DNA Analysts
  - 9 Technicians
- STACS•CW LIMS
  - Paperless system allows for non-lab activities to be done remotely
  - Easy access to all lab information (sample history, instruments, audits)
  - Compilation of final documents to send to client



## Post-Pandemic Considerations and Current Outlook

## **Post-Pandemic Considerations**

- Impact to on-site staff
  - Prioritize on-site staff training
- Balancing throughput
  - On-site staff to remote ratio
- Dedicated staff ready to solve any network and software issues
  - IT is critical since any VPN issues equals a loss of productivity from remote analysts
  - Dedicated DNA analyst and DNA technician for STACS-CW specific issues



## **Staff Retention**

- Remote life is not for everyone
- Clear expectations for on-site versus remote hiring
- Approve any on-site to remote status changes when there is a valid reason for the analyst and a need for the laboratory
  - Plans to move can mean retaining a trained analyst





## **Capacity Changes**

- Casework throughput capacity increased
- Average Turnaround time:
  60 calendar days



#### **Number of Cases Over Time**



## **Looking to the Future**

- Continue expanding the team both on-site and remote
- Continue to increase capacity without sacrificing turnaround times or quality
- Remote analyst candidates have grown via word of mouth and positive feedback during the interview screening process
  - Added benefit that candidates are not completely unknown and are more likely to succeed





## Questions?



**Thank You** 



© 2022 Signature Science, LLC