

CREATION OF SATELLITE BIOLOGICAL SCREENING LABORATORIES

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OBJECTIVES

- Why Expand DNA services?
- Disadvantages of building DNA laboratories in remote areas
- Benefits of building Biological Screening laboratories
- Biological Screening laboratory layout
- Equipment
- Training
- Workflow
- Adding limited DNA capability

WHY EXPAND DNA SERVICES

- Transport of evidence to laboratory
- Access to individuals involved in criminal case
- Case resolution time
- Communication with law enforcement

TRANSPORT TO LABORATORY

- Transportation time
- Transportation delays
- Casework delays (weeks or even months)
- Possible incomplete evidence submission



ACCESS TO INDIVIDUALS INVOLVED IN CRIMINAL CASE

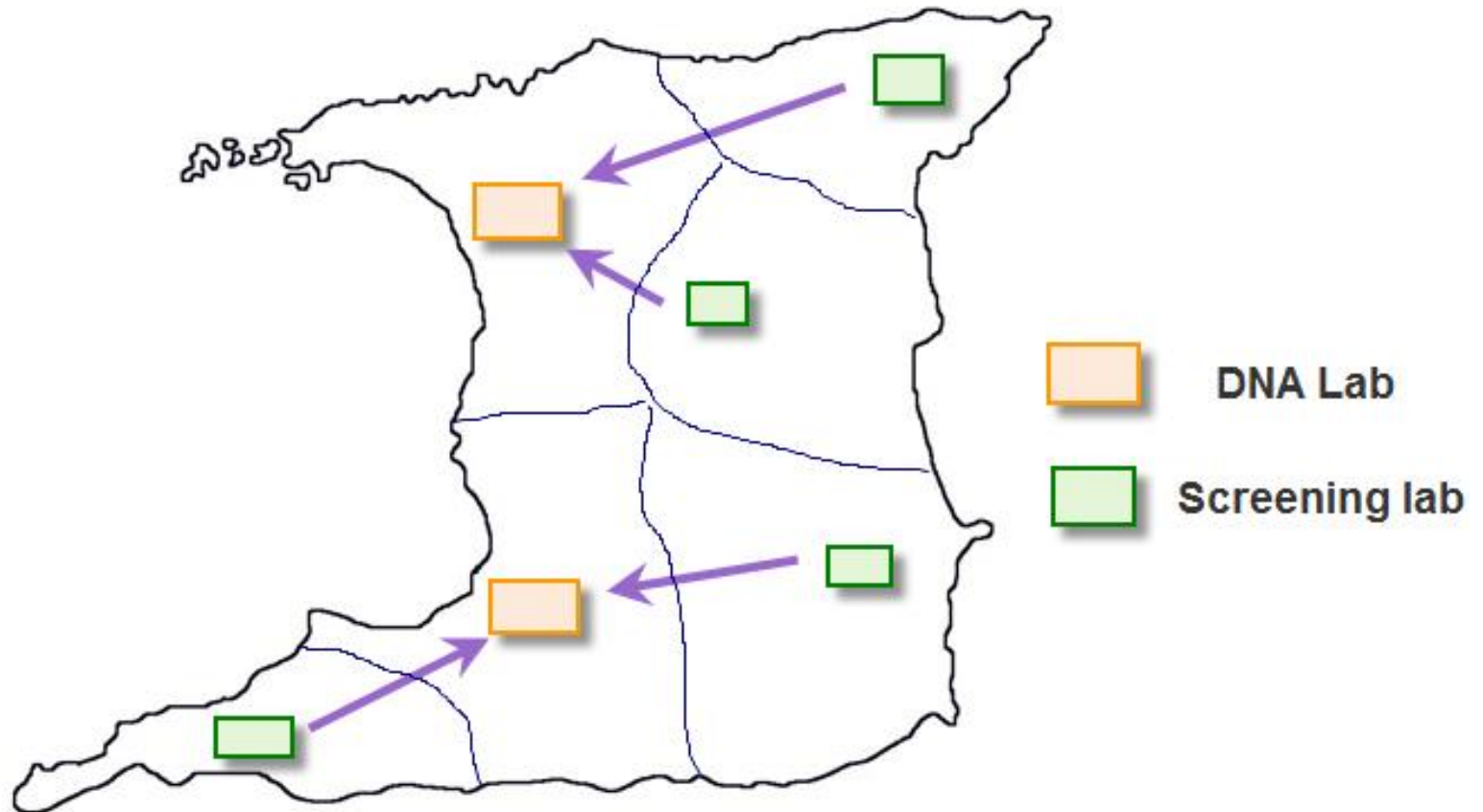
- Not all suspects, victims or persons readily available
- Evidence collection delays
- Local access = earlier processing



CASE RESOLUTION TIME

- Remote laboratory priorities
- Case resolution speed
- Better information for regional laboratory
- Material pre-screen for regional laboratory

LABORATORY PLACEMENT



COMMUNICATION WITH LAW ENFORCEMENT

- Relationship with local law enforcement
- Case details more readily available
- Case resolution status more easily communicated
- Evidence collection and preservation training more readily available



WHY NOT BUILD FULL DNA LABS?

- Expensive
- Sensitive equipment
- Separate spaces required:
 - Extraction separated from Quantification
 - Amplification and Pos- Amplification procedures
- More space is required
- More training is required
- Validation takes longer
- Service and maintenance contracts

WHY NOT BUILD FULL DNA LABS?

- Start up costs
- Time
- Continued maintenance



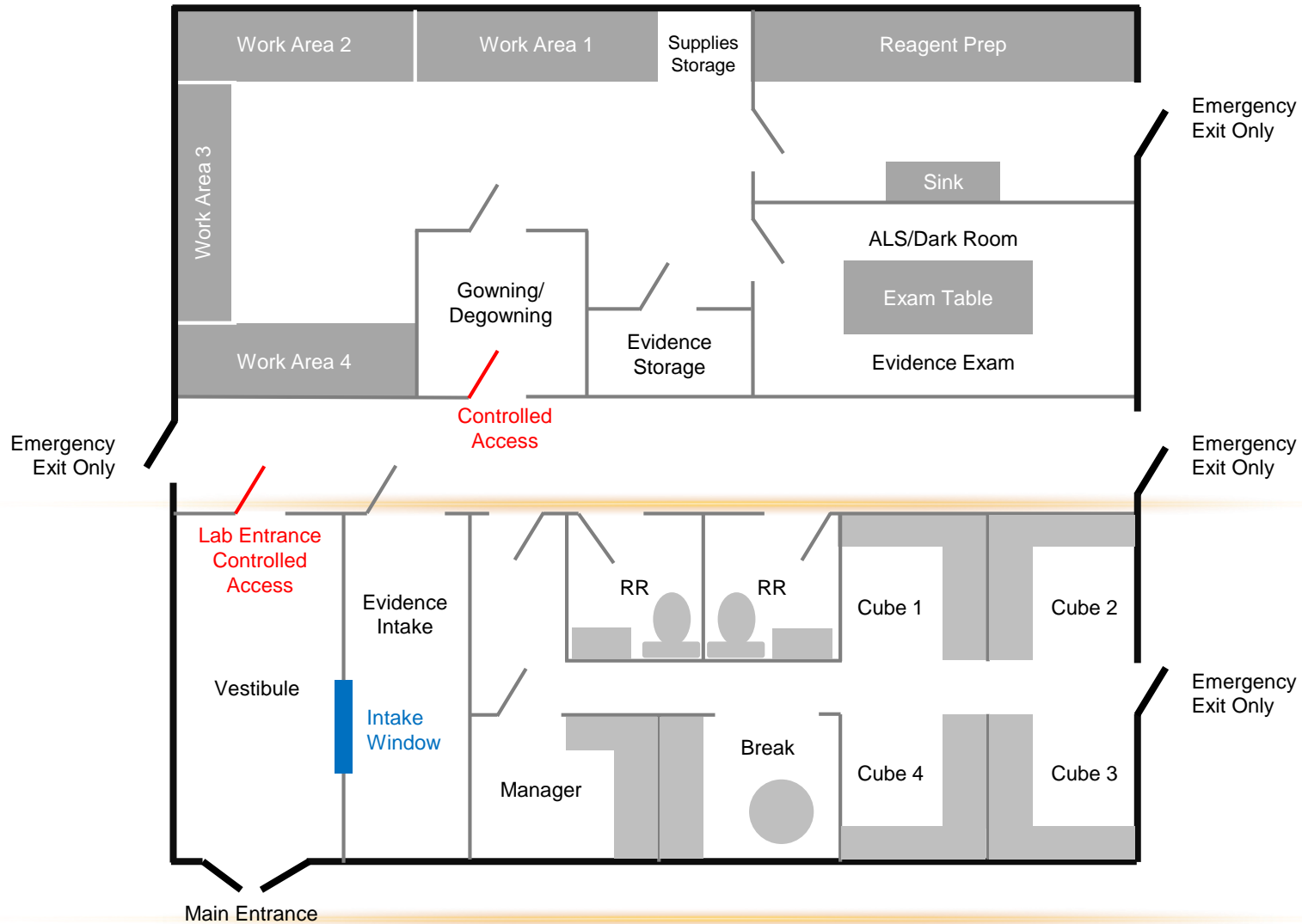
BIOLOGICAL SCREENING LABS

- Fewer special requirements
- Smaller space requirements
- No special conditions for instruments

MINIMUM REQUIREMENTS FOR BIOLOGICAL SCREENING LAB

- Sufficient evidence work areas
- Dark room for alternate light source (ALS) work
- Evidence storage area
- Reagent prep area
- Supply storage
- Evidence intake and administrative areas





EQUIPPING A BIOLOGICAL SCREENING LAB

Microscopes

- Screening for sperm
- Optimally, one microscope for each screener, preventing backlogs



EQUIPPING A BIOLOGICAL SCREENING LAB

Stereoscopes

- Placed in the ALS darkroom
- Used to identify hair and fibers



EQUIPPING A BIOLOGICAL SCREENING LAB

Mini-Crime scope

Placed in the dark room

Screening using
fluorescence to find
biological fluids



EQUIPPING A BIOLOGICAL SCREENING LAB

Pipettes, tips and trays

Accurate transfer of liquid reagents

One set for each analyst



EQUIPPING A BIOLOGICAL SCREENING LAB

Water System

- Sterile water to wet swabs

Water system
example:
sterile water vials
can also be used.



EQUIPPING A BIOLOGICAL SCREENING LAB

Vortexes and Centrifuges

- Serological testing
- Optimally, one per analyst



EQUIPPING A BIOLOGICAL SCREENING LAB

Consumables

Single-use items

- Gloves
- Wipes
- Evidence tape
- Tweezers, etc



Amount needed based
on caseload

EQUIPPING A BIOLOGICAL SCREENING LAB

Biological Waste Disposal

Waste bins

Sharps containers

Service/logistics for
disposal



EQUIPPING A BIOLOGICAL SCREENING LAB

General supplies

- Cleaning
- Safety (PPE, first aid)



EQUIPPING A BIOLOGICAL SCREENING LAB

Typical reagents to test for:

- Blood
- Semen
- Saliva
- Hair suitability

More specialized testing:

- Urine
- Feces

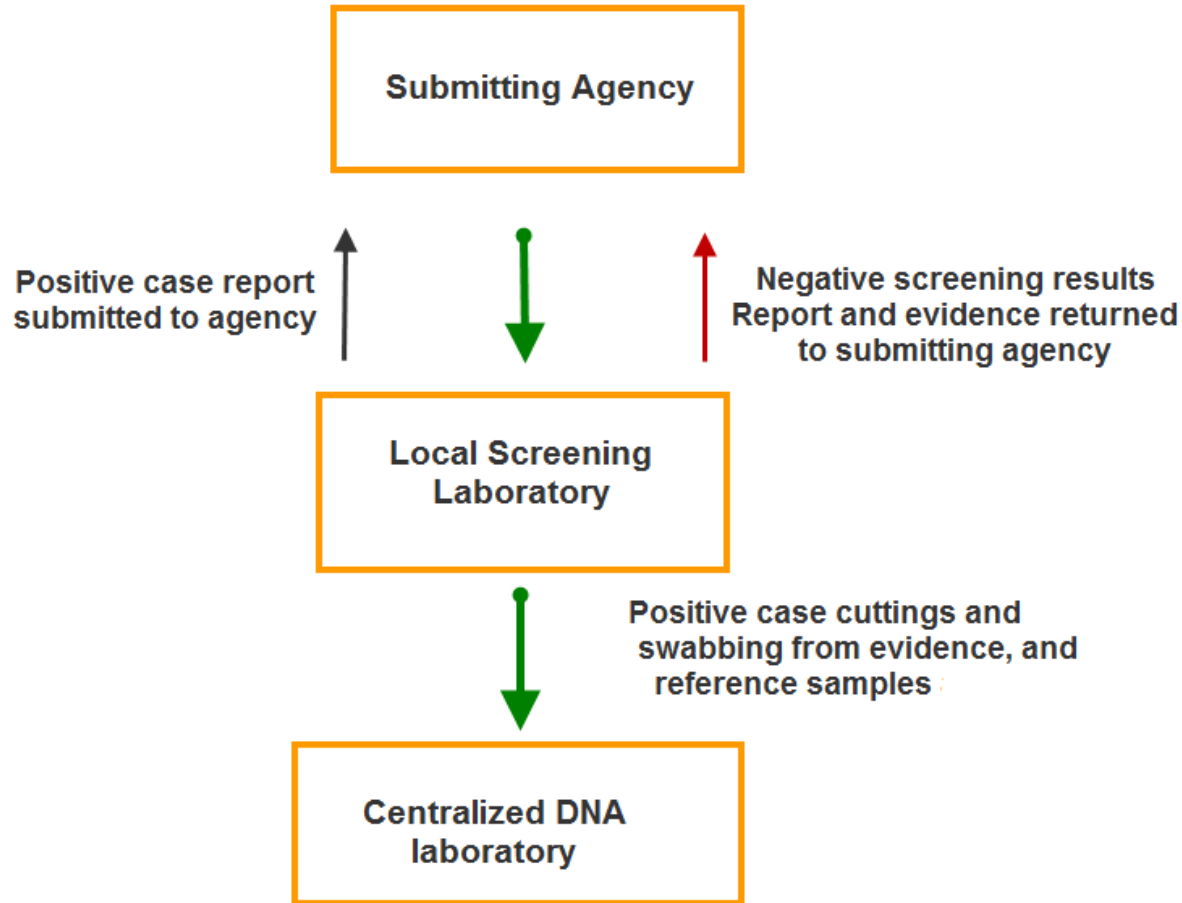


TRAINING AND VALIDATION REQUIREMENTS

- Simpler requirements
- Can be completed in a few months
- Screening equipment validation can be accomplished in a month or less.



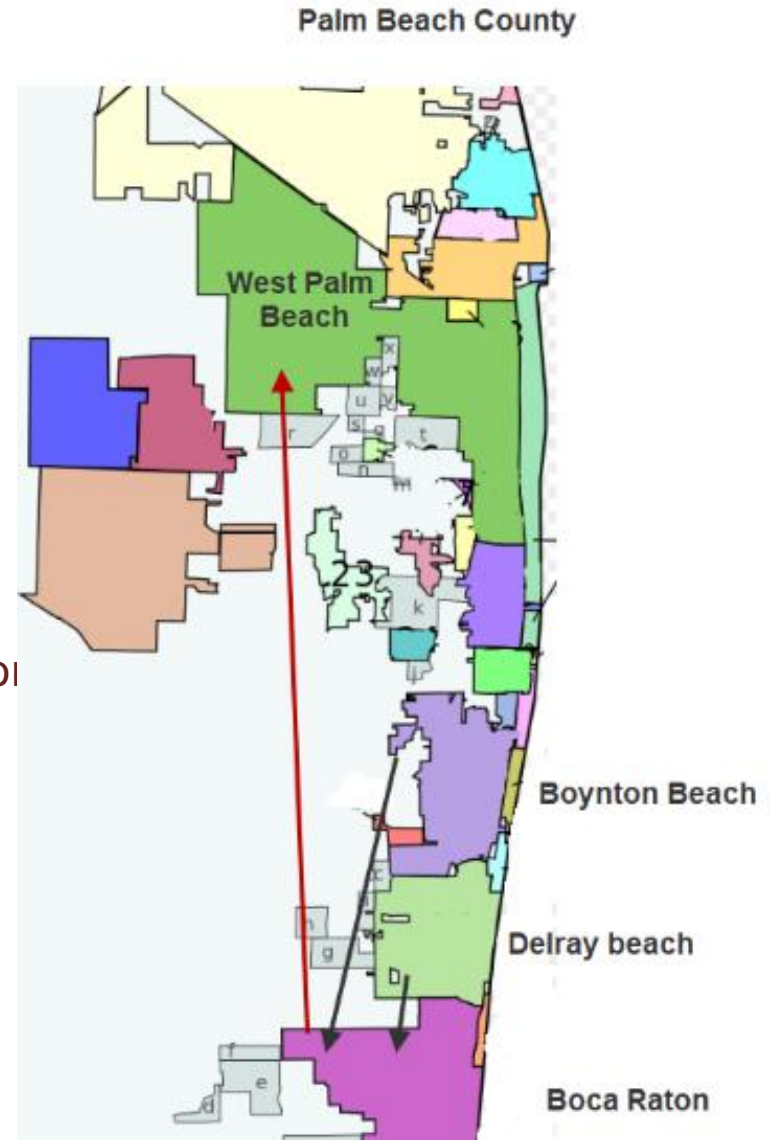
WORKFLOW BETWEEN LAB AND AGENCIES



IN PRACTICE

Palm Beach County, FL (US):

- Boca Raton Police Department screens cases for the city of Boca Raton, Boynton Beach, and Delray Beach
- Samples testing positive are sent to the Palm Beach County laboratory for DNA testing
- Laboratory releases reports to submitting agencies



ADDING LIMITED DNA CAPABILITY

Rapid DNA Capabilities

(Thermo Fisher Scientific RapidHit ID System)

- Process reference samples in 90 minutes
- One sample at a time
- Reference sample no longer be sent to DNA lab (lowering their caseload)
- Instrument can be placed anywhere there is standard power.
- Training is minimal: less than a day to learn to operate



ADDING LIMITED DNA CAPABILITY

Additional:

- The reference swab can also be sent to the DNA lab for confirmation
- Several instruments can be linked to one main computer.
- Results can be transferred directly from the screening lab to computer at the DNA lab.

Multiple software packages:

- Matching software
- Elimination database
- Kinship analysis
- Familial Searching

QUESTIONS?