



ILLUMINATING SOLUTIONS

VERSA 1100

DIFFERENTIAL DIGESTION
FOR SEXUAL ASSAULT KITS
UTILIZING DNASE I

- No carryover of EC fractions
- Minimum Human Intervention
- ~ 5 hours for 96 samples

Automated Differential Digestion

Sexual assault evidence samples require the use of a specific method known as a differential digestion to separate sperm from non-sperm cells.

As forensic laboratories faced the increase of public and legislative demands for timely examination of sexual assault evidence kits, automated liquid handling workstations were implemented to meet the demand. An automated differential digestion protocol was developed using a DNase I digestion step.

The application of a degradative agent to selectively remove non-sperm DNA from mixed samples, allows automation of the differential digestion process, saving time and labor.

CASE STUDY

The Oakland Police Department and Contra Costa County successfully eliminated their backlog by adopting the VERSA 1100 Gene and utilizing DNase I. This enzyme is used to digest epithelial cells before the sperm cell fraction is analyzed, offering two benefits: ensuring no fraction carryover and eliminating the need for repetitive wash steps.



RUN TIME

- ▶ 96 samples ~ 5 h
- ▶ 48 samples ~ 3 h
- ▶ 18 samples ~1.5 h



FIGURE 1. Full differential digestion workflow with automating component using VERSA 1100

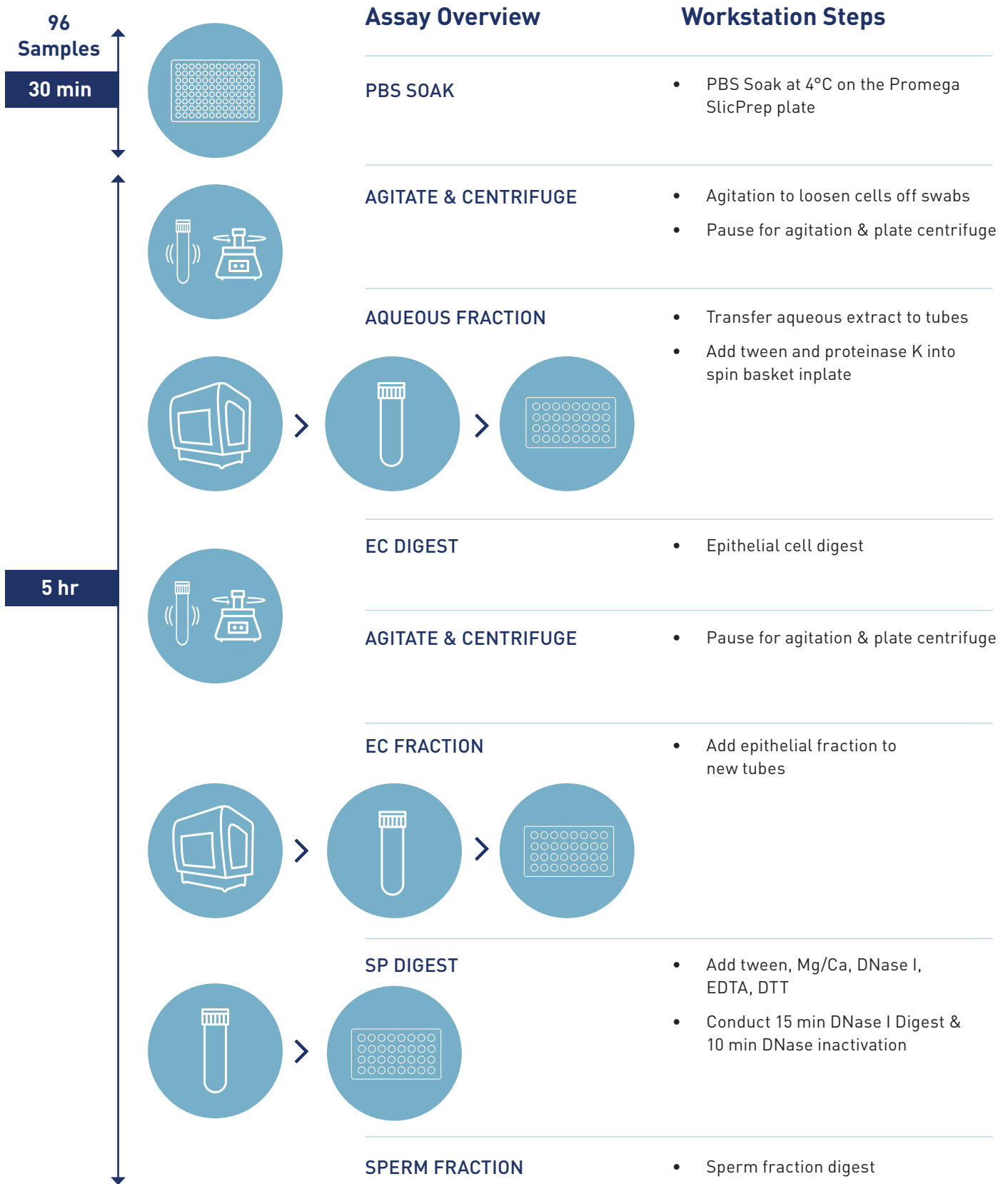


FIGURE 2. The DNase 1 Differential Digestion workflow using VERSA 1100

Technical Specifications

Differential digestion protocols can vary from lab to lab. Having the ability to incorporate different workflows over time is an important aspect to take in to consideration within the ever changing field of forensics. That's why it was important to leave VERSA 1100 completely modular and open, this in turn means there are a plethora of adaptors available for the multitude of commercial downstream extraction workflows employed in laboratories.

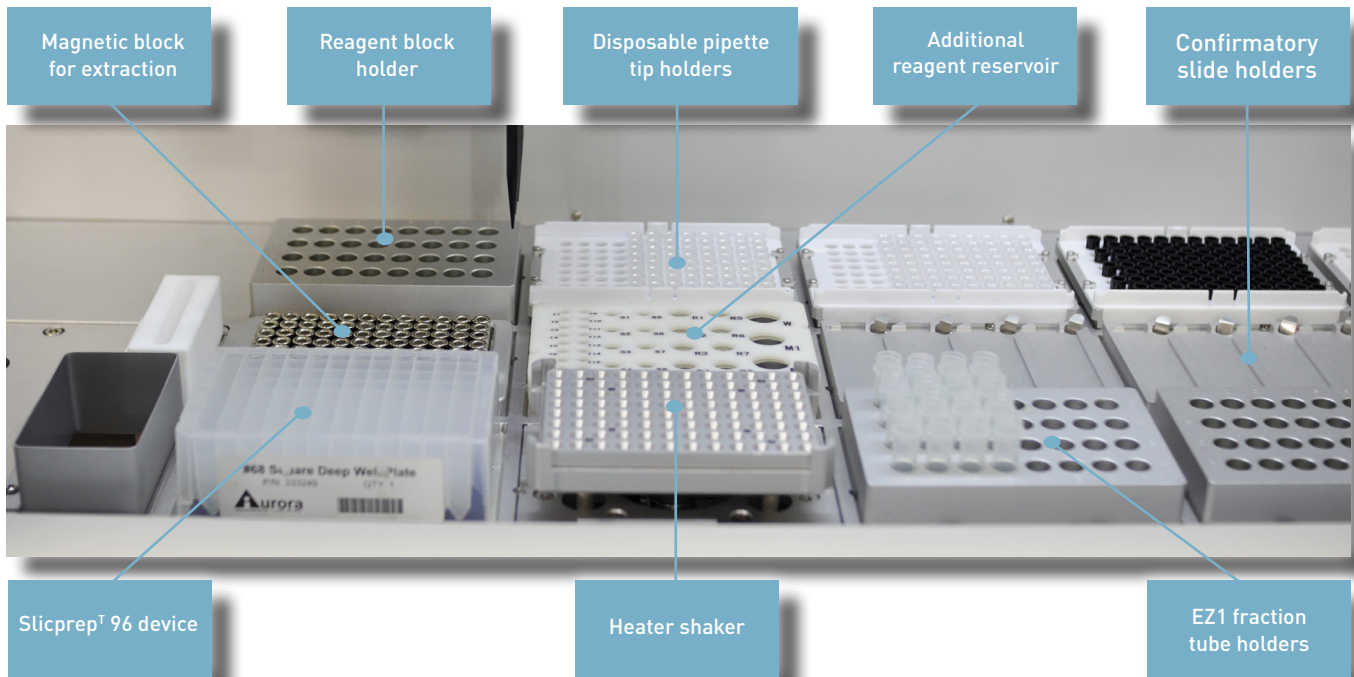


FIGURE 3. The typical deck layout for differential workflow



FIGURE 4. Optional: Promega Maxwell™ extraction tray insert for the deck

VERSA 1100	Basic Configuration
Liquid Handling Head	4-channel
Liquid Level Sensing	✓
Reagent Drop Pins	1-8
HEPA/UV/Fluorescent light enclosure	✓
Length	99 cm 39 in
Width	75 cm 29.5 in
Height	90 cm 35.4 in
Weight	162 kg 357.1 lbs

TABLE 1. VERSA 1100 Specifications

