

## **PW 4: Microscopic observation of microorganisms from a laboratory bench surface and the oral cavity**

### **I. Objectives**

The aim of this practical session is to observe microorganisms collected from two contrasting environments: an inert laboratory surface and a biological site, namely the oral cavity; and to compare the microbial presence and morphological diversity associated with an abiotic surface and a biological environment.

### **II. Principle**

Microorganisms are present in a wide range of environments, including inert surfaces and the human body. Laboratory benches may contain transient environmental microorganisms depending on handling conditions and hygiene level, whereas the oral cavity naturally harbors a rich and diverse microbiota. Gram staining, followed by light microscopic examination, enables the visualization of bacterial cells and provides preliminary information on their morphology, cellular arrangement, and differential staining properties.

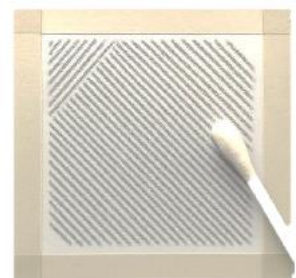
### **III. Materials**

- Microscope slides and coverslips
- Sterile swabs
- Staining reagents
- Light microscope
- Sterile physiological saline
- Alcohol
- Adhesive tape

### **IV. Procedure**

#### **A. Sampling from the laboratory bench surface**

1. Moisten the swab with sterile physiological saline.
2. Swab a  $5 \times 5$  cm area of the laboratory bench, previously delimited with adhesive tape, using close parallel streaks while rotating the swab.
3. Spread the collected sample onto a microscope slide and allow it to air dry.
4. Perform Gram staining and observe under a light microscope.



#### **B. Sampling from the oral cavity**

1. Take a sterile swab and gently rub it against the inner cheek.
2. Spread the collected sample onto a microscope slide.
3. Heat-fix the smear, perform Gram staining, and observe under a light microscope.

### **Microscopic observation and interpretation**

Note the presence or absence of microorganisms, their relative abundance, their shape, and their organization.