# Additional Writing exercise 05: Methods

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The following example methods section (from a published paper!)1 describes how bacterial samples were collected and Gram-stained. How would you improve it?

A sterilized cotton swab was wetted with running water (for samples from taps, surface waters, springs, groundwater wells, and water treatment plant inlets and outlets) or dipped into the sample bottle (for sea intrusion samples) and about 1 mL of sample was cultivated on sterilized agar medium in a petri dish under the flame of a battery operated Bunsen burner onsite. Petri dishes were covered with glass lids and stored in sterile ice boxes at ambient temperature. The samples were transferred to a 25 °C incubator immediately after arrival to the laboratory; the minimum incubation time of the cultivated dishes was 5 days. After that, different colonies were collected with the help of a sterile swab, cultivated on agar, and left to incubate to be examined separately. The Gram staining method was applied to observe gram-positive and gram-negative microorganisms. For gram-positive microorganisms, preparations were coated by adding crystal violet dye solution and left for 1 min, washed with sufficient distilled water, covered with the addition of Lugol solution, and left for 1 more min (Figures 4a and 4b). For gram-negative microorganisms, preparations were washed with distilled water, 95% ethanol was added, and the preparations were left standing for 15 s. An aqueous fuchsin dye solution was then added, and after waiting 30 s, they were washed with sufficient distilled water (Figures 4c and d). Dried preparations were examined under a microscope and aerobic colony counts were measured in square centimeters for the samples.

Methods only – don’t prejudge results

Abbreviations

Not a protocol

Common knowledge – field specific

Vague – what is sufficient?

Missing key details

1. ŞİMŞEK, CELALETTİN; AKINCI, GÖRKEM; FISTIKOĞLU, OKAN; CANLI, KEREM; SÖZBİLİR, HASAN; AYOL, AZİZE; and BİLGİÇ, EFEM (2024) "Response of water resources to the Kahramanmaraş earthquakes (MW 7.7 and MW 7.6) that occurred on February 6, 2023, on the East Anatolian Fault Zone (Türkiye)," *Turkish Journal of Earth Sciences*: Vol. 33: No. 1, Article 6. <https://doi.org/10.55730/1300-0985.1899>