

## Cleaning protocol of cranial remains

### Handling and coding procedures:

- 1) Handle only one skull/mandible per time (some procedures listed below are applicable only to skulls and not to mandibles. For mandibles, follow all the applicable steps);
- 2) Open the box and bag (if any), check if the material consists of a skull, a mandible, or both, and fill in the Register of "The Human Bone Collection" assigning a new register code combining:
  - Numbers: progressive number starting from "001" according to previous records;
  - Letters: "S" if only skull or skull part / "M" if only mandible or mandible part / "SM" if both skull and mandible or respective parts;
  - Example: the first box containing an entire skull and a piece of mandible will be "001-SM";
- 3) Write on the plastic identification card the register code with a permanent marker (the plastic card is waterproof and it ensure to maintain the code during cleaning) and legate it to the skull by using a lace so that it will accompany the skull/mandible throughout all the procedures;
- 4) Prepare a plastic bottle, an identification folder, a sealed plastic bag, and two small containers, and code everything according to the plastic identification card;
- 5) Remove the skull/mandible from the box including its bag (if any) and place it on a dedicated tray. Remove the skull/mandible from the bag (if any). Always use both hands in handling the skull placing the thumb in the foramen magnum (if applicable), other openings (e.g. orbits, zygomatic arches) are fragile and should never be used for handling;
- 6) After removing the skull/mandible from the bag (if any) turn the bag upside-down on the tray to check if anything is left inside. If any small bones or teeth are present, collect them in a cotton bag (which allows water to enter in the next cleaning stage); if any soil or other materials are present collect them in a plastic bottle;
- 7) Collect the identification paper sheet and any label or material with information into an identification folder;
- 8) Verify that no adhering substances (e.g. textile, ochre, pollen, metal residues, skin, hair, vessels) are present. If any, carefully remove them with tweezers and collect them in a sealed plastic bag;
- 9) Check if any mobile tooth or bone that may fall during cleaning procedures is present. If any, remove, mark, and put them in the cotton bag (mark teeth according to FDI World Dental Federation notation and bones with progressive letters);
- 10) When the skull/mandible, bone fragments, teeth, soil or dust, adhering substances, material with information, have been safely collected, throw away the old bag or container (if any);
- 11) Classify the condition of the skull/mandible according to the Classification of Skull & Mandible Conditions Template assigning the appropriate colour-code to the skull/mandible;
- 12) Complete the missing information from the Register of "The Human Bone Collection";

### Cleaning procedures:

- 1) Clean only one skull/mandible per time;
- 2) Clean the auditory meatus on the tray using a wooden pick (before submerging the skull). Particular care should be taken to save any ear ossicles that may be in the soil stuck in the meatus. If any, put them in a small container (one set from the left and one from the right meatus);
- 3) Fill a bucket with water, gently submerge the skull/mandible, and leave it submerged for 20 minutes (time it) to allow softening of the dirt;
- 4) Gently brush the skull/mandible to remove soil and dust using toothbrush with soft bristles (do not damage the skull/mandible with its plastic handle of the toothbrush). Focus especially on the flat surfaces, keep brushing delicately and constantly for 2 minutes in each area;
- 5) Once one area has been completed, submerge the skull/mandible again in water, remove it, and start brushing another area;
- 6) For areas of difficult access, bottle brushes with soft bristles should be used (do not damage the skull/mandible with its metal handle). This should be done especially on the internal surfaces, keeping brushing delicately but constantly for about 2 minutes in each area;
- 7) Once one area has been completed, submerge the skull/mandible again in water, remove it and start brushing another area;
- 8) Some areas are very fragile (e.g. nasal septum, orbit walls, the nasal conchae), and harsh brushing or scraping may permanently damage the skull/mandible;

- 9) Wooden picks (if necessary) can be used to loosen up dirt fragments not removed by the previous brushing procedures;
- 10) Once all areas have been cleaned, submerge the skull/mandible again in water, remove it, and check if any residual dirt is present on the outside or inside. Repeat the previous procedures (if necessary);
- 11) Fill a second bucket with water and gently submerge the skull/mandible, then remove it (repeat this action several times), then put the skull/mandible back on the tray;
- 12) Check if any bone fragments or teeth are present on the bottom of the two buckets. If any, put them into the cotton bag;
- 13) Put a filter on the bottom of the sink and slowly pour the water from the buckets into the sink. If any further bone fragment or teeth get stuck in the filter, put them in the cotton bag, if other material is stuck in the filter do not dispose it in the sink and use the trash bin instead;
- 14) Fill a third bucket with water and gently submerge the cotton bag with its content, and leave it submerged for 20 minutes to allow softening of the dirt;
- 15) Move the content of the cotton bag on the tray and gently clean it by brushing according to the previous instructions;
- 16) Put the content back into the cotton bag, submerge the cotton bag in water, then it back on the tray;
- 17) Slowly pour the water from the third bucket into the sink, having the filter still in place, if other material is stuck in the filter do not dispose it in the sink and use the trash bin instead;

Drying and storing procedures:

- 1) Place the plastic bottle, the identification folder, and the sealed plastic bag and the small containers (if any) back into the box and leave the box on the table;
- 2) Put the skull/mandible and the cotton bag on a drying tray with absorbent paper underneath, and place it on the shelf making sure that the material cannot roll or fall (if skull and mandible are both present, put them separate and not in occlusion);
- 3) Put an Identification Label on the box (short vertical side) with the required information;
- 4) Leave the material drying for two weeks, checking and changing the position of the material after one day and after one week. If the material is not dry after two weeks, change again the position and let it dry for one more week;
- 5) When the material is dry, prepare a cotton bag with 100g of silica gel and put the skull and the silica gel bag in the box;
- 6) Check the silica gel colour every week for the first four weeks. If it turns from blue to pink, replace it with a new bag of silica gel and dry the humid one for 24 hours at 55°C in the oven at the 7<sup>th</sup> floor).