

The team of Prof. Kobayashi has named “**Cloaca Graft**” which represents transplant grafts of kidney and urinary-related; a combination of organ bud, urinary duct and bladder urinary tract as a kidney organ-anlage.

1. “Cloaca” in anatomical terminology

In zoological anatomy, a **cloaca** (*/kloo'ekə/*) is the posterior opening that serves as the only such opening for the intestinal, reproductive, and urinary tracts of certain animal species. All amphibians, birds, reptiles, and monotremes possess this orifice, from which they excrete both urine and feces, unlike placental mammals, which possess two or three separate orifices for evacuation. The cloacal region is also often associated with a secretory organ, the cloacal gland, which has been implicated in the scent marking behavior of some reptiles, amphibians and monotremes.



(The images picked up from free Wikipedia English version)

2. “Cloaca Maxima” from Ancient Roman sewer system

The **Cloaca Maxima** (also called the **Maxima Cloaca**) is one of the world's earliest sewage systems. Constructed in Ancient Rome in order to drain local marshes and remove the waste of one of the world's most populous cities, it carried effluent to the River Tiber, which ran beside the city.

The name literally means *Greatest Sewer*. According to tradition it may have been initially constructed around 600 BC under the orders of the king of Rome, Tarquinius Priscus. The Cloaca Maxima originally was built by the Etruscans as an open-air canal. Over time, the Romans covered over the canal and turned it into a sewer system for the city.

This public work was largely achieved through the use of Etruscan engineers and large amounts of semi-forced labor from the poorer classes of Roman citizens. Underground work is said to have been carried out on the sewer by Tarquinius Superbus, Rome's seventh and last king. Although Livy describes it as being tunneled out beneath Rome, he was writing centuries after the event. From other writings and from the path that it takes, it seems more likely that it was originally an open drain, formed from streams from three of the neighboring hills, that were channeled through the main Forum and then on to the Tiber. This open drain would then have been gradually built over, as building space within the city became more valuable. It is possible that both theories are correct, and certainly some of the main lower parts of the system suggest that they would have been below ground level even at the time of the supposed construction.

The below image is the “Cloaca Maxima” of modern days.



(The image picked up from free Wikipedia English version)

3. The collecting part for motorcycle exhaust pipe

The Japanese motorcycle industry has been enjoying an astonishing growth after the World War II. One of them was the last state-of-the-art motorcycle in the Showa era “Honda CBR 400F NC17 (FE), which forms exhaust pipe in shape of collecting pipe called “Type 1 Cloaca”.



(The image picked up from free Wikipedia Japanese version)