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Promoting Excellence in the Teaching of Human Anatomy & Physiology

The Mermaid Models of the Bologna Wax Collection

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Abstract

Having recently discussed at length in this journal the role of the University of Bologna anatomical waxes in medical education (Galassi *et al.* 2015), we are compelled to add to the conversation by discussing one more stunning example of wax sculpture of the utmost importance in the field of teratology and anatomic pathology.

The sculptures in question represent two cases of sirenomelia. The one on the right side (Figure 1) was modeled, most likely in 1824, when the fetus was studied by the renowned wax artist Giuseppe Astorri (1785-1852), who was commissioned for this work by the anatomists Luigi Rodati (1762-1832) and Francesco Mondini (1786-1844). The artist not only deftly demonstrates the physical abnormalities with great precision, but also succeeds in adding an expressiveness that turns it into a rather extraordinary and compelling work of art. In addition, another interesting aspect that makes this wax sculpture unique is its accompanying dry viscera preparation (Rodati 1854). (Figure 2) As was the habit in those days, the waxwork was paired with a Latin commentary published in 1834, where one can still read the original case report as well as admire a meticulous drawing of the abnormal fetus (Rodati 1843). (Figure 3) The wax on the right side represents another case of sirenomelia, probably the one studied and published by Luigi Calori (1807-1896) in 1859 (Calori 1859).

Sirenomelia (from the Greek σιρήν 'siren', and μέλος 'mélos', 'limb'), also known as Mermaid Syndrome, is a rare, 1/100,000 live births, (Calori 1859) and severe congenital condition in which the legs are fused together, associated with both visceral and urogenital abnormalities. In most cases this malformation is fatal, as life expectancy is at most one or two days. The exact cause of this condition is unknown, although multiple genetic and environmental factors may be involved in its pathogenesis. Clinical studies have proposed several hypotheses; the most widely



Figure 1
Wax models showing sirenomelia from the “Luigi Cattaneo” Museum of Anatomical Waxes of the University of Bologna. Photo from Rossella Gelsi’s private collection.

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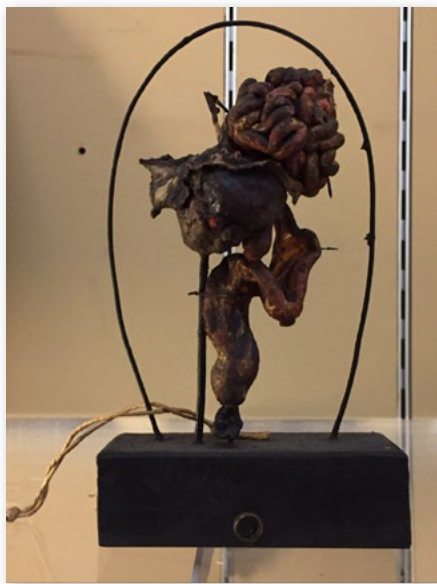


Figure 2
Dry viscera preparation from the fetus. “Luigi Cattaneo” Museum of Anatomical Waxes. Photo from Rossella Gelsi’s private collection.



Figure 3
Drawings showing the 1824 case of sirenomelia, from Luigi Rodati’s work (1834). Photo from Rossella Gelsi’s private collection.

accepted hypothesis postulates a primary vascular defect leaving the caudal part of the embryo hypoperfused (Isik *et al.* 2015, Garrido-Allepuz *et al.* 2011).

Throughout history, mermaids have been the objects of a mysterious curiosity and they are found in very early sailors’ tales. The first literary evidence for the myth of the sirens is found in Homer’s *Odyssey*, which many scholars believe was written in the 8th century BCE. In this epic poem sirens were portrayed with bird bodies and female heads and were endowed with a chant capable of luring sailors to their death (Graves 1963). Thanks to the Danish author Hans Christian Andersen (1805 – 1875) and his famous fairy

tale *The Little Mermaid*, written in 1837, this idea became increasingly popular with the general public (Romano *et al.* 2006).

Because of its historical relevance and anatomical precision, even today this wax model proves a very useful tool for medical students approaching the realm of pathology from its morphological foundations. This compelling sculpture also serves as a launching point for a conversation about the connection between anatomy and art, as well as the influence of literature on the language of science and medicine. Such an interdisciplinary exercise enhances medical education in a unique and valuable fashion. Thankfully, the sirenomelia is on display at the University of Bologna Museum of Human Anatomy, encouraging continued dialogue nearly 200 years after it was sculpted.

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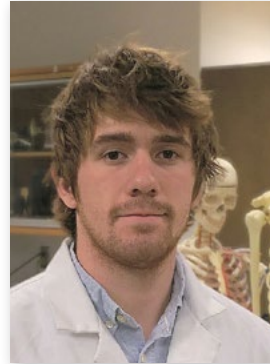
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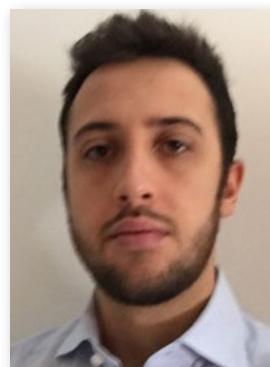
Rossella Gelsi, MSc, has extensive expertise in histology and also worked in the past at the “Luigi Cattaneo” museum. She is particularly interested in the mermaid syndrome from a morphological and genetic perspective.



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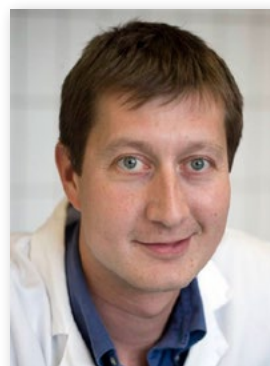
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