

Migration in the Middle Ages: Parasite stages in monasterial latrine pits.

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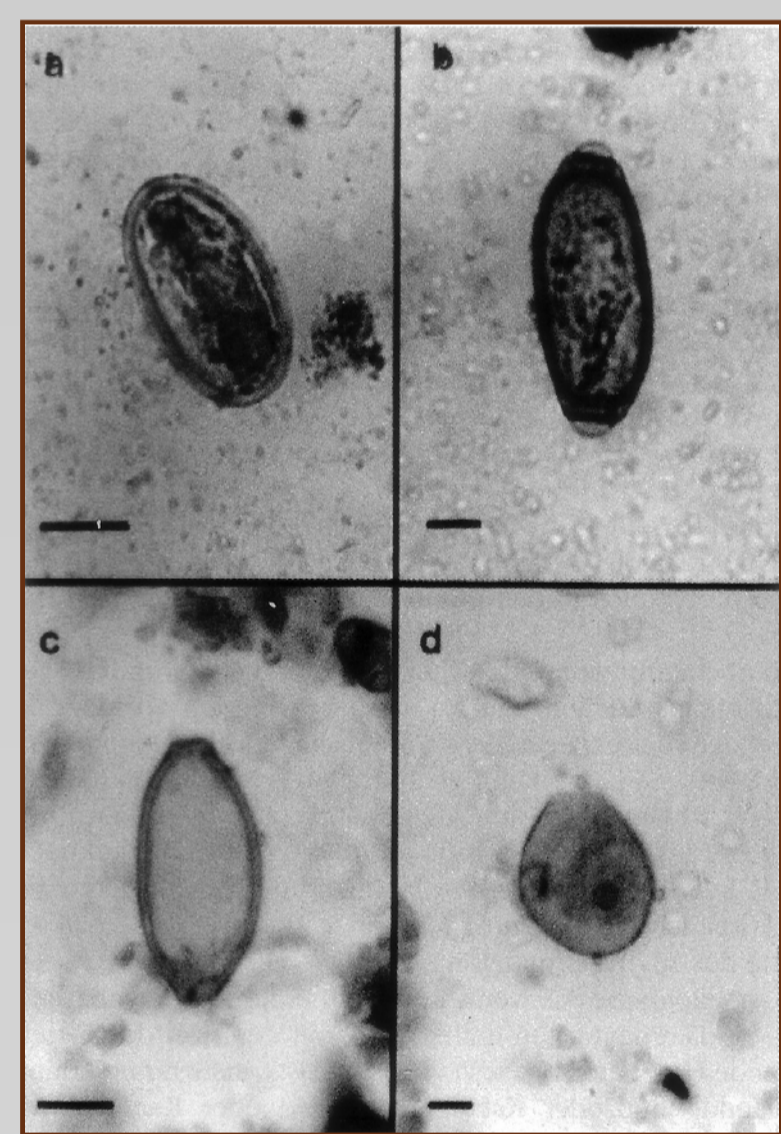
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A fascinating aspect of archeomicrobiology is the evidence of endoparasitic diseases in long before deceased persons and domestic animals that can be revealed by studying well preserved excretions and that can elucidate everyday life of groups of people. During more recent archeological excavations in abandoned monasteries in Mondsee (Upper Austria) and St. Pölten (Lower Austria) well preserved refuse pits were discovered and the contents were scientifically processed in an interdisciplinary approach.

Mondsee Abbey was founded in 748 by the Bavarian duke, in 788 it became an Imperial Benedictine abbey. 831 – 1142 it was part of the monastery to Regensburg Cathedral. In 1506 the possession passed from Bavaria to Austria. After a period of decline during the Reformation, the abbey entered a second period of prosperity, culminating in an extensive re-building of the church and the monastic premises 1730 – 1770. In 1791 the abbey was dissolved.

In the case of Mondsee abbey the pit was a wooden **slurry-** and **garbage chest**, filled with black malodorous soil and in use in the second half of the 18th century.

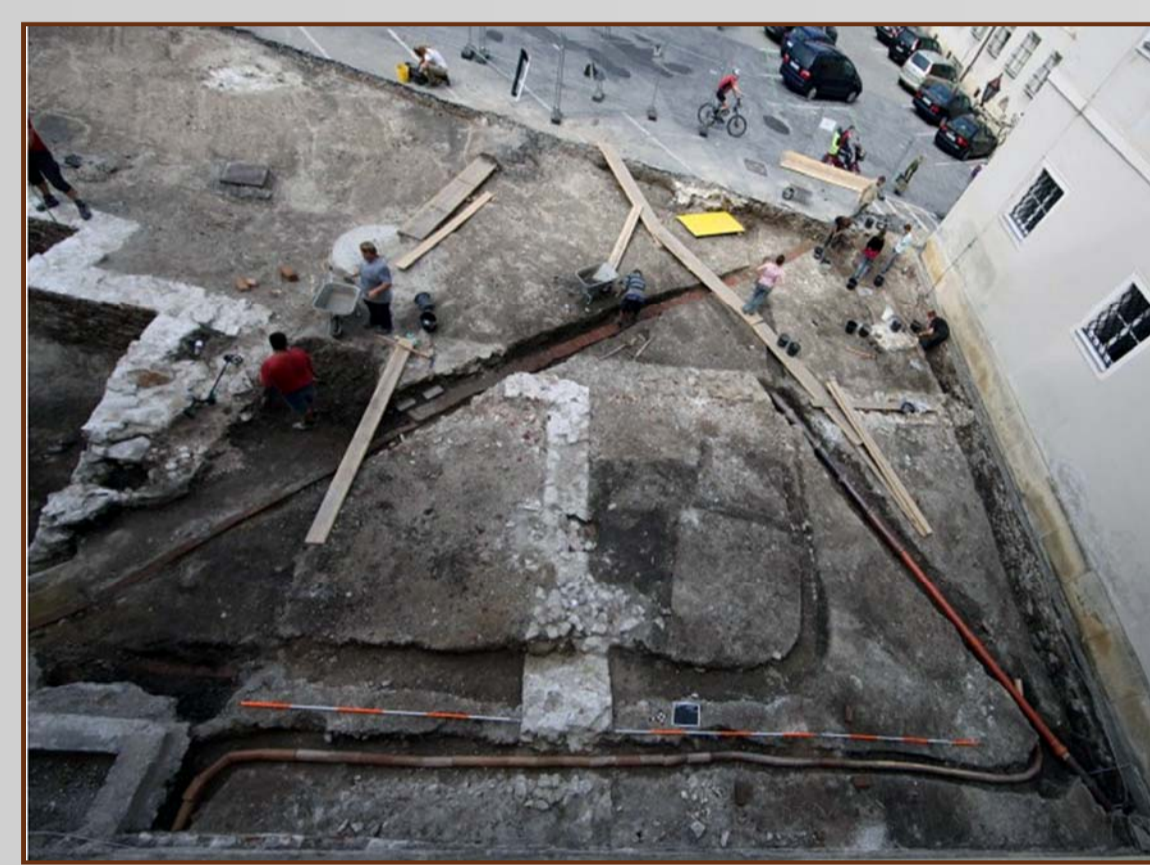


The parasite stages detected originate from faeces of domestic poultry (a: *Echinuria uncinata*), dogs and cats (b, c: *Capillaria aerophila*, *Capillaria* sp.), and Ovicaprine or rabbits (d: *Dicrocoelium dentriticum*). A few pig *Trichuris* eggs may have been misdiagnosed as *C. aerophila* eggs.

Due to the morphological indistinguishability of *Trichuris* and some *Capillaria* eggs, and the rapid degradation of DNA within an environment like a latrine pit, a scheme of helminth egg sizes and dimensions was constructed (fig.5). Most of the *Trichuris*-like eggs found seem either to be of human or of porcine provenance. As pork was seldom eaten by oratores till the 18th century, and pig bones are not overrepresented in the abattoir refuse, human infections with *T. trichiura* may have been the source of the massive egg deposition in the St. Pölten abbey`s latrine. This assumption implies an exceedingly high infection rate of the friars with whip-worms.

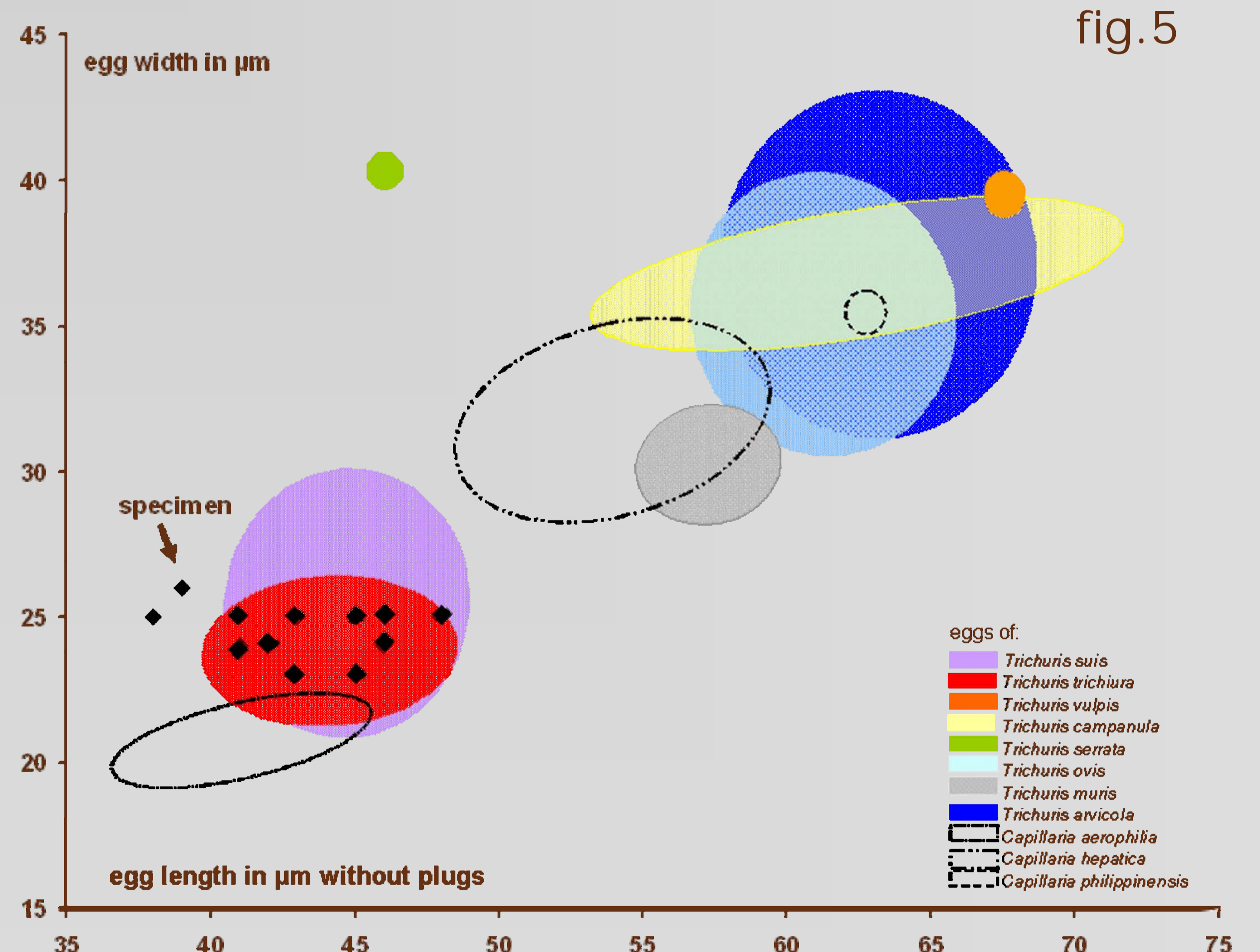
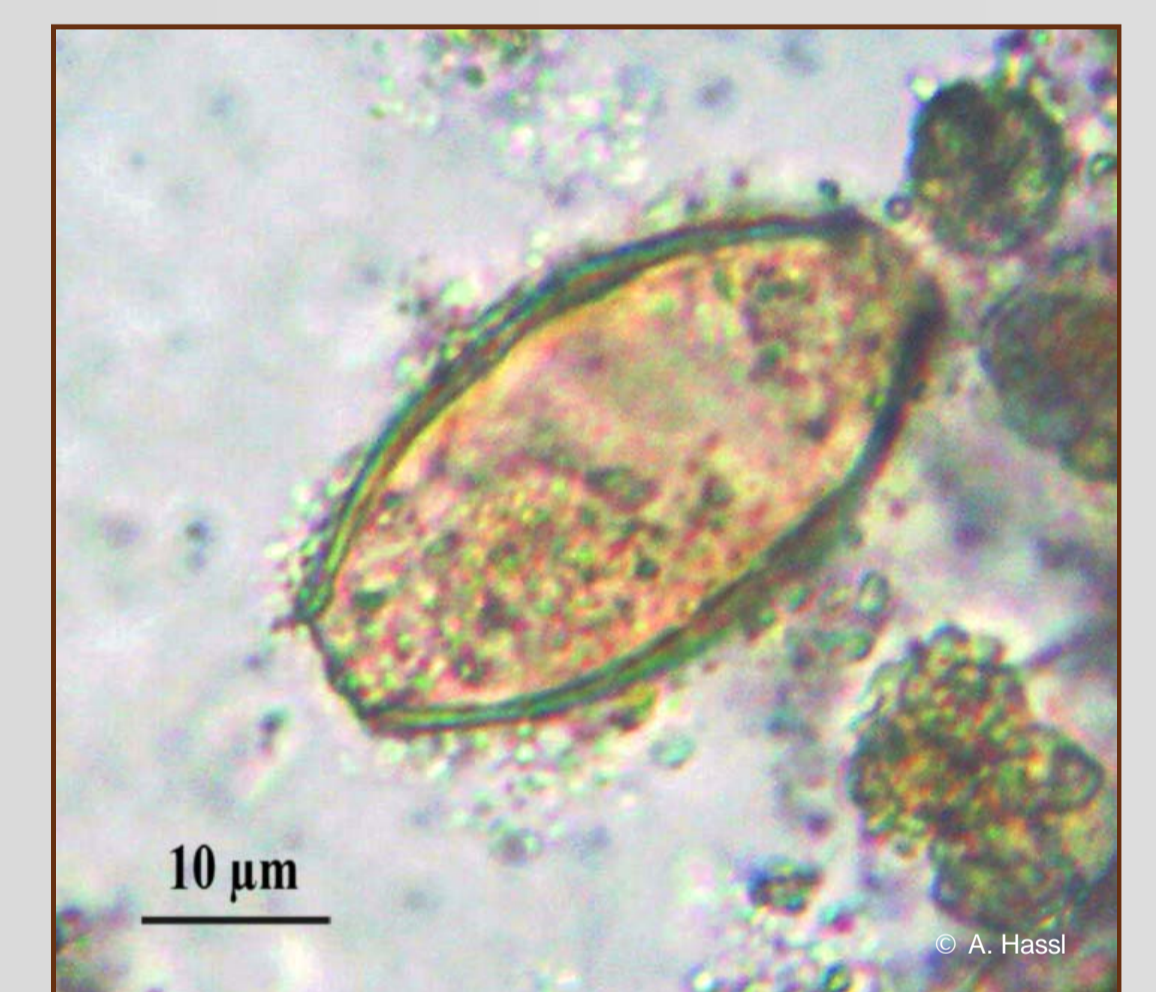
Résumé: Archaeoparasitological findings support the assumption of a bicentennial, unspectacular slurry chest in the Mondsee abbey and the evidence of a late medieval latrine shaft in St. Pölten. The postulated local epidemiology of human *Trichuris* infections during the climatic unfavorable Late Middle Ages force into the conclusions of frequent pilgrimages of the Canons Regular, a prosperous religious order, to southern holy places and of numerous attendances at Italian universities and of visits to the Holy See.

The **St. Pölten abbey** was founded around 790 by the Benedictine abbey Tegernsee. After devastation it was repopulated by Canons Regular in 1081. In 1784 the abbey was dissolved, but the buildings are used as the bishop seat of the diocese St. Pölten since 1785.



In the case of the abbey in St. Pölten the pit turned out to be a late medieval masoned **latrine shaft** filled with shards, abattoir refuse, kitchen garbage and excrements.

In the content of this pit many helminth eggs were detected, especially a lot of *Trichuris* eggs. But, the identification of the host species of the whip-worms is challenging, as eggs are morphologically similar.



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