



BRILL

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## From the Publisher

Brill's *Encyclopedia of Medicine in the Greco-Roman World* is a translation and significantly revised, updated, and expanded edition of the acclaimed reference work *Antike Medizin: Ein Lexikon* (2005), edited by Karl-Heinz Leven and published by Verlag C.H. Beck. The encyclopedia will be published as a fully searchable online resource (which will also contain the complete German-language original) and as a bound print volume. In this way, the German-language work will be made available to a much wider international readership, while simultaneously being expanded to add hundreds of new articles by renowned experts in the field. These new additions will provide coverage of more recent research, as well as filling in gaps in the original edition.

The *Encyclopedia of Medicine in the Greco-Roman World* will prove an indispensable resource for scholars and students of medical history, classics, and archeology. Similarly, scholars working in neighboring disciplines, such as Arabic and Byzantine studies, will benefit from this reference work.

Online publication is expected to commence in 2024, leading to the project's completion and the publication of the print edition in 2025.

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# Introduction

For most of Western history, medicine has been ‘Hippocratic,’ that is, based on the tradition of ancient Greek medicine. Since Hellenistic times, it has been closely linked to the figure of the ideal physician, Hippocrates. Modern scientific medicine began to take shape in the second half of the 19th century and has come to dominate how questions of health, sickness, the body, and the psyche are interpreted. It stands in stark contrast to the original framework of ‘Hippocratic’ medicine, though some connections to Greek and Roman antiquity remain. For example, Greek and Latin vocabulary continue to dominate modern medical terminology, as they have for over 2,000 years. Furthermore, there is a persistent belief that ancient medicine should still be regarded as a precursor to contemporary scientific medicine, though it differs greatly both in its methods and its conclusions. This attitude projects the interpretive power of modern medicine onto the past and can lead to fundamental misconceptions about medical theory and practice in Greek and Roman antiquity. Ancient medicine did not share the societal esteem of modern medicine, and physicians worked in entirely different theoretical and social contexts. The highly complex myth of modernity has strongly shaped our expectations of medicine.

In the *Encyclopedia of Medicine in the Greco-Roman World*, the editors aspire to offer a comprehensive picture of ancient medicine. Hippocratic medicine certainly played a major role in the ancient world, but the body, health, and sickness were also topics of concern in ancient healing cults, while religious concepts, magical practices, and other everyday customs also played important roles. Medical services were not only provided by ‘physicians’ (Greek *iatroi*, Latin *medici*), but also by healers of various qualifications, origins, and genders. Midwives, drug dealers, magicians, purifiers, and mendicant priests all competed in a diverse medical marketplace. Each perceived illness, health, and the inner workings of the body and the

soul according to their own lights. Their interpretations of these phenomena spanned natural history systems such as humoral pathology; pre-Socratic physical theories; magical efficacy principles; philosophical tenets; and demonological cosmologies.

The *Encyclopedia of Medicine in the Greco-Roman World* maps this world of ancient ‘medicine’ across more than 1,000 articles. It discusses, for example, ancient physicians, philosophers, and authors working in various literary genres, as well as a variety of rulers with a connection to medicine. Topics include anatomical structures and organs (“kidney”), diseases (“epilepsy”), symptoms (“fever”), therapeutic methods (“bloodletting”), and pharmaceuticals (“theriac”), as well as explanations of ancient medical (“crisis”) or philosophical (“teleology”) concepts. Other entries are devoted to the broad sphere of healing cults and their gods (“Apollo”), sanctuaries (“Pergamum”), and archaeological evidence (“iamata”), or engage different magical measures (“incantation”). Furthermore, everyday health practices concerning food and drink (“wine”), gender and sexuality (“birth control”), and birth (“childbirth”) and death (“funeral”) are explored. Moreover, the encyclopedia addresses different age groups (“elderly”), professions (“wet-nurse”), ethnic communities (“Scythians”), and particular patients (“eunuchs”). In the field of natural history, the encyclopedia covers not only different areas of study (“alchemy”) and philosophical topics (“harmony”), but also animals (“dog”), substances (“amber”), and environmental phenomena (“seasons”). A number of articles deal with various research topics, such as text genres (“doxography”), epochs (“Byzantine medicine”), scholarly and scientific approaches (“authenticity criticism,” “paleopathology”), and reception history (“humanism”). While the encyclopedia focuses primarily on the Greco-Roman world from the archaic to the later ancient period, articles on Byzantine and Arabic reception, as well as survey articles on other medical cultures of the

ancient Mediterranean, are also furnished in order to provide valuable context.

In addition, the articles discuss ancient Greek and Roman terms, outline the ancient positions on each subject, provide precise citations of the ancient sources, and address the main research questions. The bibliographies provide an updated

overview of text editions, translations, and essential secondary literature. The (online) accessibility of the articles is optimized by means of a dense network of cross-references, search filters, and an intuitive thematic ordering of the contents.

*Karl-Heinz Leven*

*Nadine Metzger*

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## Aegae

(Cilicia) – The Cilician port of Aegae (Greek Aegeai, medieval Layazzo, now Turkish Yumurtalık) on the Gulf of Alexandretta (İskenderun) was famed for its Sanctuary of → Asclepius (Philostr. VA 1, 7–13), which was destroyed in the reign of Constantine I (Euseb. VC 3, 56, 1f.) before briefly reviving under the Emperor Julian (361–363). Christianity sought to attach itself to the pagan cult tradition by substitution, making Aegae the location both of the martyrdom of the physician saints → Cosmas and Damian and of miracles performed by Saint Thecla.

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### Bibliography

- I. CSEPREGI, 'Christian Transformation of Pagan Cult Places: The Case of Aegae, Cilicia', in: S. CHANDRASEKARAN/A. KOUREMENOS (eds.), *Continuity and Destruction in the Greek East*, Oxford 2015, 49–57.
- F. HILD/H. HELLENKEMPER, *Kilikien und Isaurien* (Tabula Imperii Byzantini 5), Vienna 1990, 1, 160–164.
- G.H. RENBERG, *Where Dreams May Come: Incubation Sanctuaries in the Greco-Roman World*, Leiden 2017, 209f., 695–699.
- L. ROBERT, 'De Cilicie à Messine et à Plymouth', in: *Opera selecta minora* 7, Amsterdam 1990, 170–205.

## Alexander of Tralleis

(2nd half 6th–beginning 7th cent.) – Alexander of Tralleis (Lydia) came from a family of famous erudition (Agath. Hist. 5, 6, 5, ed. Keydell, p. 171), his brother Anthemius being the architect of the Hagia Sophia, and allegedly traveled the western Mediterranean – probably as an army doctor – before settling in Rome to practice medicine and perhaps also teach.

His key work is a "Therapeutics" (Greek *Therapeutika*) in twelve books, dedicated to Kosmas, perhaps Kosmas Indikopleustes. Modern editions place the twelfth book "On Fevers" (Greek *Peri puretōn*) (Febr.), which was probably originally a separate work, at the beginning of the *Therapeutika*. In this regard, Puschmann as the decisive editor followed the early print editions and not the manuscript tradition. Alexander also wrote an epistle "On the Intestinal Worms" (Greek *Peri helminthōn*) (Verm.) and a treatise "On [Diseases of] the Eyes" (*Peri ophthalmōn*).

The "Therapeutics" examines (→ a capite ad calcem) afflictions of the head, brain, and eyes, ear diseases, → angina, lung conditions, → pleuritis, stomach complaints, → cholera, colic, diseases of the → liver, → dysentery, → dropsy, kidney diseases, urinary complaints, and → gout. Alexander draws on → Aetius of Amida and other sources. He occasionally voices criticism of Galen's supposedly axiomatic assertions (PUSCHMANN 1, 297, 301, 305, 333, 379, 387, 407ff., 421; PUSCHMANN 2, 155, 163, 203, 475) (→ Galenism, Anti-). He displays a notable tendency to resort to → amulets, magical → incantations, and other measures, albeit only in extreme cases or in deference to patients' wishes (1, 15; PUSCHMANN, 1, 560/61; 564/65). The "Therapeutics" was an influence on later Byzantine physicians like → Paul of Aegina, as well as on → medieval medicine (Salerno). The work was translated into Latin, Arabic, Hebrew, and Syriac.

Antonio Garzya

### Bibliography

#### *Editions/Translations*

- I.L. IDELER, *Physici et medici Graeci minores*, 1, Leipzig 1841, 305–311 (*De vermibus*).
- T. PUSCHMANN, 2 vols. Vienna 1878–79 (*Therapeutica, De febribus, De vermibus*).
- T. PUSCHMANN, Berl. Stud. Class. Philol. Arch. 5/2 (1886) (*De oculis*, suppl. to *Therapeutica*).

### Translations

F. BRUNET, *Œuvres médicales d'Alexandre de Tralles*, 4 vols., Paris 1933–37.

### Secondary Literature

- P. BOURAS-VALLIANATOS, 'Clinical Experience in Late Antiquity: Alexander of Tralles and the Therapy of Epilepsy', in: *Medical History* 58 (2014), 337–353.
- J.M. DUFFY, 'Byzantine Medicine in the Sixth and Seventh Centuries', in: J. SCARBOROUGH (ed.), *Symposium on Byzantine Medicine*, Dumbarton Oaks 1984, 21–27.
- A. GUARDASOLE, 'Alessandro di Tralle', in: A. GARZYA (ed.), *Medici Bizantini*, Turin 2006, 557–570.
- D. LANGSLOW, *The Latin Alexander Trallianus: The Text and Transmission of a Late Latin Medical Book*, London 2006, 1–11.
- V. NUTTON, 'Alexander [29] of Tralleis', in: *Brill's New Pauly* 1, 2002, 484–485.
- J. SCARBOROUGH, 'Alexander of Tralleis', in: P.T. KEYSER/G.L. IRBY-MASSIE (eds.), *Encyclopedia of Ancient Natural Scientists*, London 2012, 58–59.
- B. ZIPSER, 'Die Therapeutica des Alexander Trallianus: ein medizinisches Handbuch und seine Überlieferung', in: R.-M. PICCIONE/M. PERKAMS (eds.), *Selecta colligere, vol. II: Beiträge zur Technik des Sammelns und Kompilierens griechischer Texte von der Antike bis zum Humanismus*, Alessandria 2005, 211–234.

## Anatomy

The concept of anatomy (from the Greek *anatomē*, “incision,” “cut”) in the modern era denotes both the method of dissecting (human) bodies in order to learn about the structure of the → body, and the totality of that knowledge in the sense of a fundamental discipline of medicine. The ancient concept of anatomy must be distinguished from the modern one. The word “anatomy” (Greek and Latin *anatomia*), from the Greek *anatemnein* (“to cut open”), is first found in → Caelius Aurelianus (Acut. 1, 57). Aristotle used the Greek *anatomai* (plural of

*anatomē*) in the sense of the “dissection” of animals. He also used *anatomai* to denote illustrations of the structure of the body (HA 3, 1. 509 b 22; 511 a 13).

At first, knowledge of anatomy in the ancient world developed without the systematic opening of → corpses. The Homeric epics (→ Iliad, → Odyssey) contain anatomical information derived from observations of → wounds and the slaughter of animals. Aristotle cited Homer on the course of → blood vessels (HA 3, 3. 513 b 26–28). Some → Pre-Socratics, such as → Alcmaeon of Croton, classified anatomy as part of the study of nature, but there is no record of Alcmaeon having performed dissections. The Hippocratic physicians were interested in the “forms” (Greek *schēmata*) of the internal → organs as they sought to recognize → illnesses correctly (VM 22. L 1, 626) and avoid errors in → surgery (Art. 30. L 4, 140–144). This clinical and functional anatomy was based on external observations of patients, the wounded, and the dead, and on analogies drawn with animal anatomy (Epid. 6, 4, 6. L 5, 308). There is no evidence of the systematic study of dead bodies in Hippocratic anatomy. The first known treatise entitled “Anatomy” (Greek *anatomē*) is by → Diocles of Carystus (G. Anat. admin. 2, 1. K 2, 282), who still practiced animal anatomy, but professed increasing interest in a distinct anatomical discipline. Aristotle's anatomical research was based on animal dissection (HA 2, 1. 497 b17); his illustrated work on anatomy (Greek *Anatomai*, F 295–324 Gigon) is lost. Aristotle's view that the human corpse, following the departure of the → soul, preserved only a formal resemblance to the human being (PA 1, 1. 640 b 35f.) at first gave no new impetus to an anatomy based on dissection. → Herophilus at → Alexandria developed a systematic, descriptive, morphological anatomy, based on human dissection and human → vivisection, in which individual phenomena (Greek *phainomena*) became objects of knowledge (Anon. Lond. 21, 22f.). His work (Greek *Anatomē* or *Anatomika*), highly regarded and influential in classical antiquity, survives only in fragments (F 60a–129 v. STADEN). → Erasistratus, another whose



work on anatomy has not survived, seems also to have tried to understand pathological phenomena through anatomy. The Hippocratic treatise “On the Heart” (Cord. L 9, 76–92), which describes the beating of the heart and its function, was probably written in the Hellenistic period and may have been based on the *Anatomy* of Erasistratus. The very short Hippocratic treatise “On Anatomy” (Anat. L 8, 538f.) differs from the rest of the Hippocratic corpus in language and content and is of a later date.

The phase of anatomical study through the dissection of human corpses lasted for only one generation, and only three medical exponents of it are known by name: Herophilus, Erasistratus, and → Eudemus (G. In Hp. Nat. hom. 2, 6. K 15, 134). Certain factors unique to early Hellenistic Alexandria encouraged this form of anatomical study (→ Hellenistic medicine), including the interest and support of the → Ptolemies and an atmosphere that was only possible outside Greece, permissive of the breaching of the taboos involved in working with the human corpse and vivisection. The mention by → Manetho (FGrHist 609, F 2, 2) in the mid-3rd century BCE of “anatomy books” of the Ancient Egyptian King Athotis is apocryphal and perhaps influenced by the context of Hellenistic medicine.

The → Empiric School founded by → Philinus of Cos disputed the value not of anatomy itself, but of an anatomy based on dissection, arguing that findings from the corpse were not transferable to the living person and were accordingly useless to medicine. Moreover, studying the corpse, while not as cruel as vivisection, was “abominable” (Latin *foeda*). The Empiricists, who returned to anatomy through observation “by chance” (Latin *casus*) (Cels. 1, Prooem. 42–44), pursued a polemical dispute over the role of anatomy with the → Herophileans (Apollon. Cit. 3, 23). The → Methodic school considered itself able to manage without any study of anatomy at all (G. Meth. med. 5, 10. K 10, 349).

In the Roman Imperial period, anatomy based on the dissection of human bodies, while considered a necessary part of medical training (→ Physicians, training of) (Cels. 1, Prooem. 74), was no longer

usual. Hermetic literature considered anatomical studies to be an evil consequence of an unbridled human curiosity (Corp. Herm. F 23, Festugière 4, 15). Medical training, however, could draw on the comprehensive anatomical literature derived from Hellenistic medicine; for practical purposes, it also made use of the dissection of animals similar to humans, particularly apes, while demonstrating external anatomy by the use of → slaves (Ruf. Onom. 9f.; 127). → Skeletons were exhibited in medical tuition (Greek *didaskalia*) at Alexandria (G. Anat. admin. 1, 2. K 2, 220); these may have been → mummies. Galen pursued both a functional anatomy that incorporated → teleology and a purely descriptive anatomy, for which he wrote a comprehensive manual (Anat. admin. K 2, 215–731). He considered anatomical study of the human cadaver to be essential, highlighting and praising Herophilus’ work in this area (Ut. diss. 5. K 2, 895). However, he dissected only animals himself, generally apes and pigs. Galen argued that it would only be possible to conduct anatomical studies of human beings by examining fallen enemies, executed criminals, murder victims, and exposed infants (G. Anat. admin. 3, 5. K 2, 385f.; Comp. med. gen. 3. K 13, 604). Furthermore, deep wounds and → ulcerations, as well as surgical interventions, permitted inspection of the interior of the body. Galen argued that it was important to study the anatomy of the ape before conducting a dissection of a human cadaver, otherwise one would achieve no more insight than a cook (Anat. admin. 3, 5. K 2, 384–386; Comp. med. gen. 3, 2. K 13, 604). Galen performed his studies of the anatomy of living and dead animals as a “public presentation” (Greek *epideixis*) for an audience of professional colleagues and interested laymen, for whom spectacular demonstrations eliciting astonishment were required (→ Animal experimentation) (Anat. admin. 1, 1. K 2, 217; Praecogn. 5. K 14, 628). In his rhetoric and purpose, and despite his explicit mistrust of → “Sophists” (Nom. med. 30 Meyerhof/Schacht), Galen comes close here to his contemporaries, the philosophers of the “Second Sophistic.” Just as the “Second Sophistic” turned back to “classical” antiquity, so Galen considered

Hippocrates to have been just as important to anatomical studies as Herophilus (In Hp. Epid. 2 comm. 4. CMG 5, 10, 1, S. 312). He also argued that → Plato (in the *Timaeus*) had worked up important knowledge about anatomy of which note should still be taken (Anat. admin. 6, 13. K 2, 581). Although this judgment also reflects Galen's high opinion of Hellenistic anatomy, it was more important to him – in anatomy as in all other medical fields – to emphasize the authority of Hippocrates (and Plato), in whose line of succession he positioned himself.

The anatomical knowledge of → Byzantine medicine, such as that of → Theophilus Protospatharius, was based on surviving textual sources, especially Galen. Occasional evidence dating from between the 4th and the 12th centuries, however (Ps.-Eust. Comm. in Hexaemeron. PG 18, 788 D; Georg. Torn. In Ann. Comn. 225 Darrouzès), proves that the idea of dissecting human bodies to obtain scientific anatomical knowledge persisted, although little is known of any practical anatomy performed in the Byzantine period. One presumably fictitious example of an autopsy performed to establish a cause of illness is found in Byzantine accounts of the rhetor → Hermogenes.

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## Bibliography

- E.M. CRAIK, 'The Hippocratic Treatise on Anatomy', *Class. Quart.* 48 (1998), 135–167.
- M.-P. DUMINIL, *Hippocrate: Plaies, Nature des Os, Coeur, Anatomie*, Paris 1998, 199–206.
- L. EDELSTEIN, 'The History of Anatomy in Antiquity', in: L. EDELSTEIN, *Ancient Medicine*, Baltimore 1967, 247–301.
- M. GLEASON, 'Shock and Awe: The Performance Dimension of Galen's Anatomical Demonstrations', in: C. GILL et al. (eds.), *Galen and the World of Knowledge*, Cambridge 2009, 85–114.
- I. GAROFALO, 'Note filologiche sull'anatomia di Galeno', in: *Aufstieg und Niedergang der römischen Welt* 2, 37, 2 (1994), 1790–1833.
- J. KOLLESCH, 'Die anatomischen Untersuchungen des Aristoteles und ihr Stellenwert als Forschungsmethode in der aristotelischen Biologie', in: W. KULLMANN/S. FÖLLINGER (eds.), *Aristotelische Biologie: Intentionen, Methoden, Ergebnisse*, Stuttgart 1997, 367–373.
- F. KUDLIEN, 'Antike Anatomie und menschlicher Leichnam', *Hermes* 97 (1969), 78–94.
- F. KUDLIEN, 'Anatomie', in: *Pauly-Wissowa Suppl.* 11 (1968), 38–48.
- G.E.R. LLOYD, *The Revolutions of Wisdom: Studies in the Claims and Practice of Ancient Greek Science*, Berkeley 1987, 158–167.
- V. NUTTON, 'Anatomy', in: *Brill's New Pauly* 1, 2002, 651–655.
- V. NUTTON, *Galen: A Thinking Doctor in Imperial Rome*, London 2020, 57–60.
- C.M. OSER-GROTE, *Aristoteles und das Corpus Hippocraticum: die Anatomie und die Physiologie des Menschen*, Stuttgart 2004.
- J. ROCCA, 'Anatomy', in: R.J. HANKINSON (ed.), *The Cambridge Companion to Galen*, Cambridge 2008, 242–262.
- L.A. SALAS, *Cutting Words: Polemical Dimensions of Galen's Anatomical Experiments*, Leiden 2020.
- R. SELINGER, 'Experimente mit dem Skalpell am menschlichen Körper', *Saeculum* 50 (1999), 29–47.
- H. VON STADEN, *Herophilus: The Art of Medicine in Early Alexandria*, Cambridge 1989.
- H. VON STADEN, 'Anatomy as Rhetoric: Galen on Dissection and Persuasion', *J. Hist. Med.* 50 (1995), 47–66.
- H. VON STADEN, 'The Discovery of the Body: Human Dissection and Its Cultural Contexts in Ancient Greece', *Yale Journal of Biology and Medicine* 65 (1992), 223–241.
- A. STÜCKELBERGER, 'Vom anatomischen Atlas des Aristoteles zum geographischen Atlas des Ptolemaios. Beobachtungen zu wissenschaftlichen Bilddokumentationen', in: W. KULLMANN/J. ALTHOFF/M. ASPER (eds.), *Gattungen wissenschaftlicher Literatur in der Antike*, Tübingen 1998, 287–308.

## Cheese

(Greek *tyros*, Latin *caseus*) – The manufacture of cheese from slightly spoiled → milk is attested dating back to the Homeric period (Od. 9, 246–249). Sheep and goat milk were most commonly used in the Mediterranean world and cow milk north of the Alps (Aristot. Hist. an. 3, 20. 521b–522b). Rome imported cheese from Gaul and the Alps (Plin. HN 11, 97). Medicine classified cheese according to its → qualities as dry, caustic, and increasingly warm with age. It triggered thirst, thickened the bodily fluids, and was difficult to digest (Hp. VM 20. L 1, 620; Cels. 2, 25). Only the youngest, softest, and lightest types, ideally unsalted, were recommended as nutritious (Gal. Alim. fac. 3, 16. K 6, 689ff.; Plin. HN 28, 34). The astringent effect of cheese was exploited against → diarrhea and weeping or purulent eczemas (Dsc. 2, 79; Plin. HN 28, 34).

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### Bibliography

- J. ANDRÉ, *L'alimentation et la cuisine à Rome*, Paris 1961, 152–155.
- A. DALBY, *Siren Feasts: A History of Food and Gastronomy in Greece*, London 1996, 66; 108; 135–136; 164.
- A. DALBY, *Food in the Ancient World from A to Z*, London 2004, 80–81.
- A. GUTSFELD, 'Cheese', in: *Brill's New Pauly* 3, 2003, 208–209.
- M. MACKINNON, 'Meat and Other Animal Products', in: P. ERDKAMP/C. HOLLERAN (eds.), *The Routledge Handbook of Diet and Nutrition in the Roman World*, London 2018, 150–162.

## Cleopatra

(69–30 BCE) – As Cleopatra VII Philopator, the last Ptolemaic Queen of Egypt (51–30 BCE), Cleopatra supported certain physicians, including → Dioscorides Phakas, and was herself said to have written a work about → cosmetics. Galen preserved extracts from this work that gave prescriptions for disorders of the hair (Gal. Comp. med. sec. loc. 1, 2. K 12, 403–405 u. 432–434; 1, 8. K 12, 492f.). A total of six fragments of this work survive (Ed. Plant). Stories of Cleopatra's → human experimentation, using poison on condemned prisoners (Carm. Bell. Aeg. 5f.; Plut. *Antonius* 71, 6–8; Cass. Dio 51, 11, 2) or on her own servant girls (Gal. Ther. Pis. 8. K 14, 235), are based on legend.

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### Bibliography

#### Edition/Translation

I.M. PLANT (ed.), *Women Writers of Ancient Greece and Rome*, London 2004, 135–144.

#### Secondary Literature

- M. DE NARDIS, 'Kleopatra of Alexandria', in: P.T. KEYSER/G.L. IRBY-MASSIE (eds.), *Encyclopedia of Ancient Natural Scientists*, London 2012, 482.
- M.D. GRMEK, *Il Calderone di Medea: la sperimentazione sul vivente nell'Antichità*, Rome 1996.
- G. MARASCO, 'Cleopatra e gli esperimenti su cavie umane', *Historia* 44 (1995), 317–325.
- G. MARASCO, 'Cléopâtre et les sciences de son temps', in: G. ARGOUD/J.-Y. GUILLAUMIN (eds.), *Sciences exactes et sciences appliquées à Alexandrie*, Saint-Étienne 1998, 39–53.
- I.M. PLANT (ed.), *Women Writers of Ancient Greece and Rome*, London 2004, 5; 135–144.
- F. URSIN, "The Mother of Chemical Peeling" oder: Wie Kleopatra zum Bad in Eselsmilch kam', *Thersites* 12 (2020), 38–70.