The chair of chymiatria created at the University of Marburg was among the earliest academic initiatives aiming to integrate chymistry into the medical curriculum. If its practical applications in pharmacy and its relationship with patronage have been examined by historians, the theoretical part of the chymiatria programme still remains to be explored. In the form of student disputations and dissertations held or presided over by Heinrich Petraeus, a professor of medicine at Marburg and Johannes Hartmann’s son-in-law, “chymiatric” essays expounded various medical issues. Centred on pathology, therapy, and physiology, these theoretical explanations proposed a “hermetic–dogmatic” interpretation merging the views of Paracelsus and Galen. This article examines these disputations and their stance concerning the living body, sickness, and treatment, and how they shaped the status of chymistry as an art and a science on the verge of institutionalisation.

Introduction

The creation of an academic position devoted to chymiatria in 1609 at Marburg, a university town in the state of Hesse, was one of the most fascinating episodes in the history of alchemy and medicine. As its name suggested, this chair promoted the teaching of chymical medicine, with the aim of reconciling the humanist medical tradition with the “new” Paracelsian philosophy. To do so, the subject of chymiatria offered both a theoretical and practical programme including the preparation of Paracelsian drugs in a laboratory (laboratorium) created for this purpose. At that time, it represented the earliest step in institutionalising chymistry as part of

the university curriculum whereas, in the rest of Europe, it was usually taught outside academic spheres. As illustrated by the lectures at the Jardin des Plantes in Paris, the teaching of chymistry in the early seventeenth century developed with the support of influential court figures, princes, and patrons. While this remained true for the creation of chymiatria at Marburg thanks to the patronage of the landgrave of Hessen–Kassel, it was nonetheless implemented as part of the academic programme of the Marburg Faculty of Medicine.

As its appointed professor and a prominent author of “chymiatric” writings, the German mathematician and physician Johannes Hartmann (1568–1631) was the leading figure of the Marburg cutting-edge initiative. At the laboratory, Hartmann taught practical applications in pharmacology, most notably, on preparing recipes of opium, laudanum, and potable gold. These recipes were inspired by the treatises of the Paracelsian physicians Oswald Croll, Joseph Du Chesne, and Jean Beguin, which were gathered in Hartmann’s posthumous Praxis chymiatrica (1633) included in his Opera omnia (1684). Previous to the chair, Hartmann had been appointed mathematician at the court of the landgrave Moritz of Hessen–Kassel, where he learned chymistry and began to correspond with Paracelsian physicians. He then became professor of mathematics at Marburg, where he obtained a medical degree in 1606 with a view to obtaining the chair of chymiatria.

Alongside Hartmann, another professor of medicine was in charge of teaching the theoretical courses of chymiatria: Heinrich Petraeus (1589–1620), who was Hartmann’s son-in-law. Born in Schmalkalden (Thuringia), Petraeus studied medicine at Marburg and, a few years before obtaining his medical degree, was appointed professor of medicine in 1609. According to Fritz Krafft, Petraeus had an interesting yet tragic end. Overwhelmed by the charges of his teaching position, he allegedly suffered from an excess of melancholy which led him to throw himself out of a window. He died the day after, in 1620, at the age of thirty-one. His sad end came the same year as the closure of the chymiatria chair in 1620, supposedly due to Hartmann’s mismanagement.

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Johannes Hartmann, Opera omnia medico-chymica (Frankfurt: Seyler, Wust, 1684). Included in these complete works, Hartmann’s remarks on Croll’s Basilica Chymica were first published in the 1622 edition of the Basilica. He allegedly also commented on Jean Beguin’s Tyrocinium chymicum in 1618, although the official author of the notes was Christoph Glückradt, a student in the Chymiatria programme.
During his brief academic career, Petraeus had a prolific intellectual production, which consisted of dissertations and disputations that he and his students held at Marburg as part of the *chymiatria* programme.\(^8\) Marburg-published disputations had a readership mostly composed of learned physicians, such as Daniel Sennert (1572–1637) and Andreas Libavius (c.1550–1616), who were attentive to the implementation of Paracelsian medicine in the university classroom and laboratory. In promoting the “chymiatric” learning at Marburg, these essays also reached a broader European audience anxious to read about the appraisal of alchemical preparations on the market. These included notable wonder drugs such as the panacea of the German “empiric” Georg am Wald and the potable gold of the English physician Francis Anthony (1550–1623).\(^9\) The latter even quoted a student’s dissertation in support of the efficacy of his “golden panacea,” which was prepared during Hartmann’s practical sessions in the laboratory.

In addition to these practical concerns in pharmacy, the disputations held by Petraeus and his students gave insight into the teaching of so-called “hermetic medicine.” The term “hermetic” entailed a Paracelsian understanding of healing which supported the use of mineral and metallic drugs made by distillation as an alternative to Galenic therapy. Marburg disputations explained the application of hermetic medicine to physiology, pathology, and therapeutics from a theoretical perspective. Despite their obedience to Paracelsus, the essays proposed a “chymiatric” interpretation of the living body which was strongly indebted to Galenic medicine. In so doing, Petraeus and his students supported the chymical “compromise” between Paracelsian and Galenic medicine, which would be further developed by the German physician Daniel Sennert.\(^10\) Such a compromise consisted in providing a common lexicon to both systems and clarifying the most difficult notions of the Paracelsian philosophy in light of the medical tradition.

The object of this paper is to explore the principles of conciliation between Paracelsian and Galenic medicine at Marburg. First, it aims to examine the authors and terminology that Petraeus and his students referred to in defining health and sickness, therapy, and pharmacy. Second, it seeks to appraise how far the compromise between Paracelsianism and Galenism went at Marburg, by identifying the point of contention concerning the medical conception of the body and treatment. In considering the Galenic-Paracelsian compromise, I will explore the Marburg definition of chymistry and its role regarding medicine. While it has been claimed that chymistry was mostly considered as an ancillary art to medicine, the theoretical content of

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Marburg publications pointed to a more ambiguous status which at times presented chymistry as a theoretical field of knowledge based on natural philosophy.\footnote{Antonio Clericuzio, “‘Sooty Empiricks’ and Natural Philosophers: The Status of Chemistry in the Seventeenth Century,” Science in Context 23 (2010): 329–50. On Libavius’s claim to the independence of chymistry from medicine, see Moran, Andreas Libavius, 40–41.} With these questions in mind, I will assess the originality of the medical philosophy taught within the programme of chymiatria at Marburg as a cutting-edge institutional experience in the early seventeenth century.

**Disputations and dissertations**

For the theoretical part of chymiatria, Hartmann and Petraeus adopted a scholastic form of teaching and learning, which was showcased by the printed disputations (disputationes) and dissertations (dissertationes) of their students.\footnote{See Ku-ming Chang, “From Oral Disputation to Written Text: The Transformation of the Dissertation in Early Modern Europe,” History of Universities 19 (2004): 129–87; Olga Weijers, In Search of the Truth: A History of Disputation Techniques from Antiquity to Early Modern Times (Turnhout: Brepols, 2013), 192–95; Meelis Friedenthal, Hanspeter Marti, and Robert Seidel, “Introduction,” in Early Modern Disputations and Dissertations in an Interdisciplinary and European Context, ed. Meelis Friedenthal, Hanspeter Marti, and Robert Seidel (Leiden-Boston: Brill, 2020), 1–33.} In the early modern period, university dissertations and their theses were often used as exercises for the rhetorical training and the examination of the students. In their printed form, they could also serve as a way of diffusing new, even radical, ideas, as illustrated by Antoine de Villon’s and Etienne de Clave’s theses in natural philosophy at Paris.\footnote{Didier Kahn, “La condamnation des thèses d’Antoine de Villon et Etienne de Clave contre Aristote, Paracelse et les ‘cabalistes’ (1624),” Revue d’histoire des sciences 55 (2002): 143–98.} In the case of Marburg, the informative function of the printed theses was to show the institutional success of chymiatria in its appreciable number of enrolled students, and to promote its innovative and consistent programme of chymical medicine.

Chymiatria at Marburg was first advertised by Hartmann’s inaugural discourse for the opening of the chair, followed by a dozen disputations held by his students, including two essays by Petraeus. All these texts were collected in Hartmann’s Disputationes chymico–medicae in 1611 and 1614.\footnote{Johannes Hartmann, Disputationes chymico-medicae (Marburg: Paul Egenolph, 1611).} For his teaching position at Marburg, Petraeus took over the same task of editing the essays which the students wrote under his supervision. No less than eighty disputations and dissertations were gathered in Petraeus’s Nosologia harmonica, dogmatica et hermetica, 2 vols (Marburg: Paul Egenolph, 1615–1616) and Agonismata medica (Medical competitive pieces, 1618).\footnote{Heinrich Petraeus, Nosologia harmonica, dogmatica et hermetica, 2 vols. (Marburg: Paul Egenolph, 1615–1616); Idem, Agonismata medica Marpurgensia, dogmatica iuxta et hermetica (Marburg: Paul Egenolph, 1618). The second edition of Hartmann’s Disputationes chymico-medicae (1614) also comprises two disputations presided by Petraeus.} This significant number of texts evidenced the teaching commitments of the hard-working Petraeus, who, nonetheless, acknowledged the collective effort of his students as well as their respective roles in each essay.\footnote{Krafft, “The Magic,” 29.} Collectively prepared in the classroom by Petraeus
and his students, the disputations and dissertations were defended publicly in front of the members of the medical faculty at least once a year, according to the statutes of Marburg medical faculty. The essays were printed with the mention of an “author” and a “respondent,” who were typically Petraeus as the “president” (praeses) and the student as the respondent.  

As longstanding types of student essays, disputations and dissertations were the basis for “chymiatric” learning and, more broadly, for practical training in argumentation. Whereas disputations and dissertations designated oral and written methods of discussion, respectively, both terms were often interchangeable in early modern learning. As Olga Weijers has shown, the disputation as a genre was rooted in the ancient practice of discussing and investigating subjects following a set of rhetorical and dialectic rules established by Aristotle. In the late Middle Ages, it designated a technical form of questioning, argumentation, and debate, which became central in university pedagogy. As Ku-ming Chang has observed, early modern disputations progressively moved from a dialectic discussion on the pros and cons of several “questions” (quaestiones) to a series of “theses” (theses). Marburg disputations and dissertations broadly retained this scholastic framework for their argued discussion on a given topic. Structured in numbered theses, they debated a medical question following the traditional authorities in medicine, that is, Galen and Hippocrates. Some of them were “inaugural” in the sense that they were defended by the student with a view to obtaining a medical degree. As the equivalent of the actual doctoral dissertation, they were named “inaugural” because they marked the start of the academic career of the doctor.

The disputations that were held by Petraeus’s students had a slightly different arrangement from the dissertations. They listed twenty to 115 theses, at times accompanied by additional rhetorical markers such as questions (quaestiones), problems (problemata), and corollaries (corollaria). Apart from this general arrangement, the disputations did not follow a specific structure. By contrast, the dissertations had a predetermined composition, comprising a numbered list of twenty to seventy theses that were systematically followed by a series of ten quaestiones as short conclusive remarks similar to corollaries.

For all their loosely scholastic form as a series of theses, Marburg disputations and dissertations worked as systematic essays on a medical topic. Most of the “chymiatric” essays covered topics in pathology and therapy. In this regard, Petraeus’s Nosologia included fifty medical dissertations dedicated to nosology as the medical branch centred on the classification of diseases. The dissertations

18 Weijers, In Search, 209–36.
20 Krafft, “The Magic,” 29–37. According to Fritz Krafft, about eighty-four students enrolled at Marburg medical faculty between 1608 and 1620, and about twenty-three of them were awarded a doctorate over the same period. The Nosologia and Agonismata comprised ten doctoral dissertations under Petraeus’s supervision between 1614 and 1618.
21 On the reedition of the Nosologia, see Krafft, “The Magic,” 46–47.
were distributed in two volumes following the traditional order of diseases “from
head to toe” (a capite ad calcem). The first volume dealt with the diseases of
the head and the thorax, while the second volume was focused on the diseases of
the abdomen and the genitals. The nosological dissertations also comprised brief
indications of treatment and remedies, including Galenic-Paracelsian recipes. In ad-
dition, Petraeus’s last work before his death in 1620, the Agonismata, consisted of
thirty medical disputations in pathology, therapy, and anatomy.

While the greatest part of the student essays was centred on the causes and treat-
ment of specific diseases, a select number tackled the main challenge of chymiatria: reframing the Galenic explanation of health and treatment in Paracelsian terms. Most notably, Petraeus proposed a complete re-evaluation of all medical branches according to the tenets of chymiatria. In two disputations under the supervision of Hartmann, he advocated reuniting two allegedly ancient medical interpretations: the “dogmatic” stance, that is the Galenic tradition, and the “hermetic” stance, namely the Paracelsian approach to chymical medicine rooted in the mythical
figure of Hermes Trismegistus. Aiming to express the “chymiatric” compromise,
this terminology was recurrent in Marburg essays on “Galenic and hermetic,” “dogmatic and hermetic,” as well as “harmonic” medicine.

However, the promotion of chymiatria as a reconciliation between Paracelsian and
Galenic medicine was anything but homogeneous in the student essays. Many of them
presented mere Galenic accounts of physiology, pathology, and therapy, along with
traditional recipes which were enhanced by metallic distillates made by “spagyric”
skills. This likely reflected Petraeus’s teaching, which was dedicated as much to
Galenic medicine as to Paracelsian chymistry. The preparation of Paracelsian reme-
dies was at the centre of the sessions given by Hartmann at the Marburg laboratory
(laboratorium). While the practical side of the chymiatria programme has been pre-
viously explored by historians of science, its theoretical side, which was discussed
in Marburg printed disputations and dissertations, has received scant attention.
The following sections aim to fill this gap by presenting the conception of health,
disease, and treatment in the “chymiatric” essays of Petraeus and his students.

Petraeus’s early disputation on vital philosophy

Following his supervisor Hartmann, Petraeus considered chymistry to be both the-
oretical and practical knowledge which corrected and updated the Galenic medicine
into the hermetic-dogmatic chymiatria. This conception had longstanding roots

in late medieval alchemy, which had attempted to build alchemical knowledge upon Aristotelian physics and Galenic medicine. Petraeus tended to compare chymistry to medicine to the extent that both were considered a science and an art. In doing so, he discussed the applications of chymistry in pharmacy from the perspective of medical philosophy. Petraeus’s conception of chymiatria went through different steps in the course of his medical training between 1604 and 1609 at Marburg. As we will see in this section, Petraeus’s first disputation reflected his effort to dilute the Galenic terminology in a Paracelsian framework. By contrast, his inaugural (doctoral) disputation, as well as most of the textual production of his students, showed a different balance of Galenic and Paracelsian interpretations.

During his medical studies at Marburg, the young Petraeus opened a “hermetic” discussion on a philosophical subject, the generation of natural beings, in his Disputatio hermetica (1607). The text proposed to investigate the “real” principles of natural things by uncovering the foundations of the “vital” philosophy, in reaction to the errors of “material and elemental walkers.” With these words, Petraeus suggested that the principles of the vital philosophy of Paracelsus were opposed to the mistaken interpretation of nature that relied on material bodies. The disparaging term “walkers” referred to the Galenic physicians and the Peripatetic natural philosophers, who erred in considering the four elements to be the principles of nature. Petraeus took such a formulation from an important treatise for the diffusion of Paracelsianism in Europe, the Idea medicinae philosophicae (Idea of philosophical medicine, 1571) by the Danish physician Petrus Severinus.

Following Severinus’s conception of vital philosophy or “anatomy,” Petraeus contrasted the Paracelsian and Galenic conceptions of principles. In his view, the Galenic stance was stuck with the theory of elements and qualities to the point of defending a “corporeal,” that is, a materialistic, account of bodies. The four primary qualities and the four humours were described as sterile entities related to perishable chunks of matter, the four elements. According to Paracelsian physicians, the Galenic philosophy should have supported what was perennial and regular in the vital cycles of nature. These were determined by the flow of immaterial and eternal seeds created by God. During the generation of living beings, these seeds were fostered in different types of elements, which played the role of immaterial receptacles and matrices.

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the celestial seeds were incubated in these elements-matrices, they could grow into natural beings by progressively materialising through the coagulation of the three principles or *tria prima* – Salt, Sulphur, and Mercury. These were encapsulated in the vital principle or “balsam” of the seeds.

The Paracelsian view of generation as a “progression” of celestial seeds towards the mundane realm of nature was reflected in the style and structure of Petraeus’s disputation. In the course of an initiatory journey across the rooms of an ancient sanctuary, Petraeus recounted the different principles of nature which were fundamental to the gradual formation of natural beings. The inspired tone of the disputation was a typical feature of the Paracelsian language of the “adepts” who considered their chymical vocation a gift from God. After recounting his passage through the vestibule of the sanctuary, Petraeus went on to describe the “holy of holies” (*sanctus sanctorum*). This sacred place was the setting for his praise of the divine spirit, prime matter, form, and innate heat which intervened during the progression of seeds until their final formation into the *tria prima* and larger elemental bodies. However, the definition and role of these different notions during generation was far from being systematically discussed through a number of theses, following the scholastic rules of disputation. Instead, Petraeus’s text was structured according to the rooms of the sanctuary, while describing, with a fervent tone, all the aforementioned notions by means of an accumulation of terms – a common stylistic device in Paracelsian literature.

A few years after its first edition in Hartmann’s *Disputationes*, Petraeus’s hermetic declaration of faith incurred the wrath of the German physician Andreas Libavius. A well-known adversary of Paracelsian medicine, Libavius supported the implementation of chymistry in universities within a firm Aristotelian framework which comprised a logical language and reasoning, as well as a systematic classification of knowledge. In his view, this project was only possible by adopting the “true” chymistry rooted in the medieval figures Arnald of Villanova and Ramon Lull, who followed the authority of Aristotle and Galen. Such objectives formed the subtext of Libavius’s *Examen philosophiae novae* (*Examination of the new philosophy, 1615*). The treatise comprised a text against Johannes Hartmann, entitled “On the Paracelsian Living or Vital Philosophy According to the Danish Petrus Severinus from the Repetition of Marburg Chymiatrist Johannes Hartmann.” As indicated by this title, Libavius considered the vital philosophy taught at Marburg a needless reiteration of Severinus’s Paracelsian interpretation.

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At first glance, Libavius’s argument against Hartmann might seem to refer to a treatise entitled *Introductio in vitalem philosophiam* (Introduction to the vital philosophy) that was included in Hartmann’s complete works of 1684. However, this treatise was first published in 1623 under the authorship of the German physician Johann Ernst Burggrav (1600–1643), instead of Hartmann’s. Besides, this edition came nine years after Libavius’s polemical *Examen*. Consequently, it was not this treatise which Libavius targeted, but Hartmann’s first publication after his nomination as a professor of medicine in the *Chymiatria* programme: the *Disputationes chymico-medicae* (1611 and 1614). It consisted of a collection of disputations held by Hartmann and his students, including Petraeus’s *Disputatio hermetica*. In criticising Hartmann’s collection of disputations, Libavius did not only aim at Hartmann as a Paracelsian physician, but also at his institutional persona and his brand-new academic teaching of a “vital philosophy” inspired by Paracelsus. Nonetheless, the precise text incriminated by Libavius’s *De philosophia vivente* was in fact the *Disputatio hermetica* which Petraeus, under the supervision of Hartmann, held in 1607 during his medical training.

Libavius’s text against Hartmann, *De philosophia vivente*, proposed a critical appraisal of the Marburg conception of *chymiatria* by revealing its contradictions in style and content. Overall, it was the religious tone and terminology of the *Disputatio hermetica*, recounting a journey across a sanctuary while praising the Paracelsian philosophy, some hieroglyphic mysteries, and the Christian trinity, which profoundly irritated Libavius. As he heaped ridicule on the inspired style of the disputation, Libavius undertook a systematic debunking of each of its sentence and term over two hundred pages. As one of Libavius’s last works, the vitriolic *Examen* had a lasting effect on Marburg’s teaching professors. After the preface to his 1618 *Agonismata*, Petraeus addressed a brief warning to the reader defending himself from Libavius’s slanders. He described them as so many furious “harpies” (*harpypia Libaviana*) set loose against him and Hartmann, not to mention Paracelsian physicians who were important references in the *Chymiatria* programme, such as Joseph Du Chesne and Oswald Croll. Libavius’s polemical works, indeed, targeted a broad spectrum of Paracelsians and were partly motivated by some intellectual and professional rivalries. This was particularly evident with Hartmann, who, unlike the schoolmaster Libavius, succeeded in obtaining the protection of a prince in order to secure an academic position and establish a teaching programme in chymistry at the Marburg medical faculty.

Still, Libavius’s *Examen* pointed to the lack of structure and the terminological confusion of the *Disputatio hermetica* as a mediocre imitation of Severinus’s Paracelsian philosophy. By contrast, Petraeus’s subsequent *disputatio* had a radically

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33 Libavius’s *De philosophia vivente* often cites excerpts of the targeted text, which can all be found verbatim in Petraeus’s *Disputatio hermetica*.

different style and content, which was also adopted by the students under his supervision. In complying with the basic structure of disputation, he proposed a systematic and dialectic discussion of Galenic and Paracelsian systems across various medical fields.

**The “chymiatric” compromise**

In his inaugural (doctoral) disputation, Petraeus adopted a more conciliatory attitude to the reunion of Paracelsian chymistry with the medical tradition, both in style and content. In an extensive essay entitled *Contradictiones apparentes quatuor* (Four apparent contradictions, 1610), Petraeus proposed to reconcile the tenets of “dogmatic” and “hermetic” conceptions of medicine despite their seeming divergences.\(^35\) The disputation was an opportunity for him to display his mastery by expounding firm and well-arranged arguments on both Galenic and Paracelsian sides of the discussion.

Petraeus’s terminological use of “dogmatic” and “hermetic” had been previously delineated by Paracelsian physicians such as the French physician Joseph Du Chesne or Quercetanus (1546–1609).\(^36\) In the preface to his treatise *De priscorum philosophorum verae medicinae materia* (On the matter of the true medicine of the ancient philosophers, 1603), Du Chesne presented the Galenic and Paracelsian ways of healing and preparing remedies. In his view, Galenic medicine continued the ancient medical sect of the dogmatics built by Hippocrates. The dogmatic therapy was based on vegetal, animal, and mineral simples whose medicinal virtues came from the qualities of the four elements. On the other hand, Paracelsian medicine was rooted in the “spagyric” or “hermetic” sect established by the mythical figure Hermes Trismegistus. For Du Chesne, this medical current proposed a more efficient pharmacy consisting of chymically prepared drugs, whose healing powers came from the extracted essence or “vital balsam” of their ingredients. Such an emphasis on the twofold medicine and the balsamic nature of remedies formed the cornerstone of Petraeus’s conception of chymiatria.

In formulating his aspiration for a compromise between Galenism and Paracelsianism, Petraeus also recognised the legitimacy of the medical subfields. His doctoral disputation was structured around four conflicting statements in hygiene, physiology, therapeutics, and pharmaceutics. These medical branches had formerly been adopted by late Renaissance physicians who stood as important references in

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the “chymiatric” essays, such as Jean Fernel and Daniel Sennert. In his *Institutio-
num medicinae libri quinque* (*The five books of the institutions of medicine, 1611*), Sennert organised medical knowledge in physiology, pathology, hygiene (dietetics), semiotics (signs and symptoms), and therapeutics. By integrating
these fields in his disputation, Petraeus suggested that *chymatria*, as a medical
discipline, could be applied to the traditional medical branches instead of focusing on
the only “vital philosophy” that was praised in his previous disputation. The tradi-
tional division of medicine was also present in the disputations of Petraeus’s stu-
dents, who at times structured their essays from the perspective of physiology,
pathology, and therapy.

**Physiology: balsam, digestion, and the microcosm**

According to Petraeus, the bone of contention between Galenic and Paracelsian phy-
sicians resided in a physiological question: the first components of the living body. As we have previously seen, he tackled this problem in his *Disputatio hermetica* by
reformulating the vital philosophy of Severinus in terms of an initiatory journey. For his inaugural disputation, however, Petraeus went through the same subject in
a different manner, by weighing the differences between the Galenic and Paracelsian
interpretations. Whereas the medical tradition established four elements that were
each endowed with several qualities, Paracelsus and his followers considered them
material chunks with sterile properties. In place of the four elements, they substituted
three principles that were enhanced by chymical distillation, that is, the *tria prima*
comprising Salt, Sulphur, and Mercury. As Petraeus underlined, even if many Paracel-
sian physicians acknowledged the traditional elements in their physical system, they
still considered the *tria prima* the foundations of theoretical and practical medicine
for the explanation of health, disease, and drug action.

Following the Paracelsian conception of the *tria prima*, most of Petraeus’s stu-
dents discussed the body’s physiology in chymical terms. The living body was envis-
aged as a microcosm which functioned similarly to the macrocosm of the universe
to the extent that both entities were maintained by constant chymical phenome-
na. Viewed as an internal alembic, the organism relied on a central process: the
“separation” of various humours by distillation. In this regard, Marburg student
and future professor Johann Philip Molther illustrated the correspondence
between the microcosm and the macrocosm through the secretion of sweat and
the generation of rain and dew. He considered both phenomena as distillations
which resulted in the resolution of matter by heat and in the condensation of its re-
sidual moisture within the vessel, the body, or the air.

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eratione pluviae et toris, ex vaporibus terrae in aerem sublatis, itemque in chymicorum distillationibus, ubi humor
in cucurbita a subiecto calore resolutus, in capitello iterum condensatur.”
In showing the correspondences between the transformation of the body and that of the macrocosm, Molther’s explanation of sweat was part of a longstanding set of analogies between chymical, physical, and physiological phenomena. From ancient times, alchemists had at times described the transformations of matter following Aristotelian natural philosophy and Galenic medicine in order to build alchemy as a theoretical field of knowledge. Whereas Paracelsus disrupted this current, Petraeus and his students were much more compliant in endorsing fundamental notions from the medical tradition in their “chymiatric” explanations. In fact, they accepted most features of Galenic physiology, such as the primary qualities, the four humours, and the faculties of the soul. As part of the classical training in medicine, these notions were particularly useful for providing an intelligible framework of the Paracelsian body to an audience of university-trained physicians.

Most notably, the physiological tenets of chymiatria amalgamated Galenic and Paracelsian accounts of food digestion as a key function for maintaining the body’s life and health. Many disputations identified it as a process of alchemical separation that consisted of the extraction of pure nutriment from impure waste. This process was also described from the point of view of Aristotelian physics as the extraction of homogeneous or “homeomerous” substances, such as blood and bodily matter, from the heterogeneous foodstuff. The many transformations of this heterogeneous matter were discussed according to the Galenic account of “concoction” (coctio). For instance, the Silesian student Antonius Faber centred the explanation of evacuation, that is the eviction of morbid matter from the body, on digestive concoction. Performed by the body heat and the faculties of the soul, it occurred through successive phases bringing out humours with diverse textures. As the German student Heinrich Nolle noted, this sequence of concoctions aimed to transform food into chyle, blood, bile, body parts, and “spirits” during their passage through the stomach, the mesenteric veins, and the liver. The resulting impurities were evacuated through excrement, sweat, and urine. This explanation was also presented by the Bohemian student Stephan Steffec, who followed the Galenic tradition in defining urine as a serous humour separated from food and drink.

Within this Galenic framework, digestion was understood as a chymical separation of food which extracted the internal “balsam” (balsamum) of food stuff, that is a pure essence with vital properties. Whereas balsam initially designated a resinous and odorous ingredient in Galenic pharmacy, Paracelsian physicians defined it as

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the vital principle of living bodies. As a fertile substance, the balsam of living beings was enclosed in their seed for their conservation and propagation. It could be extracted from animals, plants, and minerals during the chymical separation of their crystalline matter. For its pure, oily, and inflammable nature, Paracelsians also called it “vital sulphur.”

The Paracelsian definition of balsam as an oily substance related to the vital principle of bodies had deep roots in early medicine and alchemy. Previously in his *Disputatio hermetica*, Petraeus associated it with the Galenic notion of “radical moisture.” Developed in Latin-Arabic alchemy and medicine, the radical moisture was an important notion for the definition of life and longevity. It was described as the oily substance of the body, which maintained its vital heat in the same way as the oil of a lamp fuelled its flame. Paracelsian physicians merged this concept with the notion of balsam as a fine oily substance which, at the level of the organism, was restored during nutrition. As the Prussian student Christoph Glückradt explained, the radical moisture of food was processed by the “mechanical spirits” of the body part so as to renew the essence of the body. This process resulted from the application, agglutination, and assimilation of food into the bodily substance, following the Galenic explanation of digestion.

As the Paracelsian equivalent of radical moisture, balsam had strong healing properties which came from its particular nature, which was modelled after the concept of innate heat (*calor innatus*) posited by Jean Fernel. This notion was fundamental for Paracelsian physicians because it highlighted the double status of the body’s principle as a heat of celestial origin and an oily humour, namely the “radical moisture.” In the late sixteenth century, the *Idea* of Severinus contributed to the amalgamation of Fernel’s interpretation of innate heat and radical moisture with the Paracelsian notion of balsam. As a chymically extractable substance related to the vital principle, balsam was also the core of the Paracelsian medicine taught at Marburg. The disputations and dissertations held by or under the supervision of Petraeus all reported the “balsamic” nature of medicine in a physiological and therapeutical context. This conception of “balsamic medicine” had been established by Du Chesne, whom I previously mentioned, in defining the distinction between dogmatic and hermetic medicine. His treatise *De priscorum philosophorum [...] materia* was dedicated to “vital balsam” as the foundation for the “universal medicine” able to cure all diseases and preserve health. This balsam came from

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48 Christoph Glückradt, “Dissertatio inauguralis: De medicina universalis” in Petraeus, *Nosologia*, vol. 2, 17–18: “[...] animalium plantarumque corpora [...] in se continent humidum primigenium et spermaticum nostro analogum, quod mechanicus [...] spiritus sibi [...] appropriat, corpus mistum elicita essentia [...].”


the divine essence enclosed in substances, which was extracted for the preparation of balsamic remedies.

If Marburg students focused their “chymiatric” discussions on the Paracelsian notions of balsam, *tria prima*, and separation, they paid less attention to other concepts. A particularly difficult topic was the account of generation as the progression of immaterial seeds from their underground abyss to the mundane scene of the world. Whereas it was highlighted in Petraeus’s *Disputatio hermetica*, it remained implicit, if not absent from the disputations and dissertations of his flock. The only exception was the disputation of the Swiss student Johann Ulrich Grob, which was centred on reproduction and the transmission of life. Grob’s essay gave a sophisticated account of the generative power of the seed according to Sennert’s *Institutiones medicinae*. In this treatise, Sennert suggested a corpuscular interpretation of matter nurtured by Aristotelian physics and Galenic medicine, as he stated that the essence or “substantial form” of the seed was transmitted by the parents through a detachable material entity.

Although Grob took up Sennert’s reasoning in his disputation on the origin of forms, he adopted an inspired yet prolix style that was more in line with the language of the Paracelsian adepts. This did not prevent Sennert from paying tribute to Marburg chymia programme in his *De chymicorum [...] liber* (1619), a treatise of chymical medicine which proposed a conciliation of the Galenic and Paracelsian systems. In his exposition of physiology, Sennert referred to the Marburg conception of the body as a microcosm and praised Grob’s *Disquisitio hermetica* on the origin of forms in support of his own conception of generation. Nonetheless, Grob’s disputation remained an exceptional essay in the same vein as Petraeus’s early concern with the Paracelsian progression of the seeds in the *Disputatio hermetica*. By contrast, most of the “chymiatric” disputations held by Petraeus’s students were dedicated to the treatment of diseases.

**Therapy: method, hidden powers, and signatures**

In proposing his hermetic-dogmatic interpretation of therapy, Petraeus was aware of the many controversies that were raised in Europe concerning Paracelsian chymistry. As he summarised, Paracelsus was accused of being a drunk and a magician, who was ignorant of the arts and unable to bring clarity in his explanations. His

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53 Daniel Sennert, *De chymicorum cum Aristotelicis et Galenicis consensu ac dissensu liber I* (Wittenberg: Zacharias Schürer, 1619), 126 and 188–89.

54 Petraeus, “Disputatio inauguralis,” 146: “Primus Paracelsus eremita, homo ebriosus, magus, maledicus, linguarum, artium methodique ignarus et contemtor, ausu quodam temerario, et humano generi perniciosissimo eam in lucem produxit.”
followers were blamed for prescribing mineral drugs that were poisonous, as they instantly invaded and weakened the body for a long time, even after death. The Paracelsian drugs were also considered dangerous for their own makers. Their sleepless labour and efforts exposed them to exhaustion and to poisonous vapours which infected their body and shortened their life. Moreover, the expenditures needed for the chymical work contributed to their impoverishment. For all these reasons, Galenic physicians viewed the making of Paracelsian remedies as a social and economic danger for patients, practitioners, and more broadly, for the Republic. To these numerous criticisms, Petraeus replied with a reconciliation of Galenic and Paracelsian therapies as he searched for the “truth” beyond the intellectual, practical, and institutional divides. His main concern, he insisted, was the supreme rules of nature and people’s health. For Petraeus, this required updating the medical tradition with Paracelsian chymistry. As a learned physician, he supported his plea for Paracelsian therapy with a theoretical argumentation on the nature of disease and treatment following Renaissance interpretations of Galenic medicine.

Most of the disputations in Petraeus’s Nosologia and Agonismata were focused on the explanation and the cure of particular diseases. They expounded a Paracelsian-Galenic pathology of ordinary and violent diseases ranging from headache and colic to plague, apoplexy, and epilepsy. All these illnesses had in common their development during digestion. As explained by Petraeus and his student Nolle, a defective “concoction” caused an incorrect separation of food stuff by the “mechanical” spirits, which left residual noxious humours. The latter coagulated and remained in the body as sticky impurities or “tartar,” a type of salt established by Paracelsus. As the German student Kraius pointed out, the “tartaric” mucilaginous humours could take a corrosive, aluminous, acidic, or styptic form. These harmful secretions disturbed the nourishment of the body substance, that is the internal balsam, and provoked diverse diseases, from “sulphurous” and “tartaric” affections, to sporadic and pestilential fevers.

As a consequence, Paracelsian therapy relied on the separation of the “tartaric” humours and the restoration of the internal balsam as the body’s vital principle. The treatment consisted of healing such an internal balsam and “oil of life” by administering a remedy which was also composed of balsam. Before Paracelsus and his followers, Renaissance physicians made a similar claim by emphasising the

medicinal powers of “artificial balsam” and radical moisture as distilled oils. In this regard, Fernel suggested that the radical moisture of plants had powerful properties which were related to their essence and cured diseases of the “total substance.” This type of disease designated violent affections including poisoning, plague, and epidemic diseases, which attacked the vital principle of the body. However, Marburg disciples of chymiatria went further by defining balsam as the only viable type of remedy for all diseases.

The cure of “tartaric” diseases with balsamic medicine was the core of the Marburg method of healing (methodus medendi), as formulated by the student Heinrich Nolle (ca. 1585–1626) in the inaugural disputation that he held in 1617. Before his training in chymiatria at Marburg, Nolle taught philosophy at the Gymnasium of Steinfurt in North Rhine-Westphalia. He published several opuscules on Paracelsian alchemy, such as the Verae physices compendium novum (New compendium of true physics, 1616), to which he referred in his disputation. According to Nolle, the divine vocation of the Hermetic adept allowed physicians to access the knowledge of health as balsamic medicine. Once acquired, the understanding of chymical separation and balsamic medicine needed to be methodically applied to therapy and submitted to public appraisal.

The “method” applied by Marburg physicians was presented as a consistent approach to therapy that had long been established in the medical tradition. As Petraeus recalled, Galenic physicians were trained to couple reason with experience by employing method for the indication of the nature, timing, way, and order of treatment. To this end, the “rational physician” carefully examined a series of factors including the evolution of the sickness, the constitution of the affected part, and of the patient, as well as other parameters related to lifestyle. With these indications in mind, Galenic physicians determined treatment according to reason, the senses, a long experience, and the consensus with colleagues. For their methodical approach, they sought to distinguish themselves from ignorant and imprudent “empirics.” Petraeus and his students, in turn, adapted the requisites of the Galenic therapy to their own “hermetic” method. As Nolle claimed in his disputation, the Paracelsian

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62 Nolle, “[Disputatio inauguralis],” 346–53.

63 See Vera Keller, Knowledge and the Public Interest, 1575–1725 (Cambridge University Press: 2015), 80–82. After his medical training at Marburg, Nolle became a professor of medicine at the University of Giessen in Hesse, where he was brought to trial in 1623 for his Rosicrucian views: Kahn, Alchimie et paracelsisme, 421; Carlos Gilly, “Theophraphia Sancta: Paracelsianism as a Religion in Conflict with the Established Churches,” in Paracelsus: The Man and His Reputation, His Ideas and Their Transformation, ed. Ole Peter Grell (Leiden: Brill, 1998), 182–84.

64 Petraeus, “Disputatio inauguralis,” 121.

therapy was both an efficient and safe way of healing. This assertion of therapeutic safety was posited many times in Marburg dissertations in order to contrast it with the arbitrary practice of the “empirics.” The student Christoph Glückradt made a similar claim by distinguishing chymia, as the “servant” of medicine which provided the universal art of healing, from the wrong practice of “cacochymists” (cacochymici), empirics, and impostors.

In the same way as Nolle, Glückradt insisted on the role of “method” in hermetic therapy. Along the lines of the Galenic methodus medendi, the Hermetic method relied on the speculative reason of the art. For Glückradt, this meant that future physicians should read and learn medical authorities by heart, namely Hippocrates, Galen, and Paracelsus, in order to combine them with experience and reflection. To do so, physicians needed to apply the theoretical precepts of chymiatria – especially, the knowledge of microcosm and macrocosm – to the individual case of the patient. According to the time, place, and circumstances of the patient, the balsamic therapy might integrate Galenic dietetics, pharmacy, and surgery. These traditional therapeutic means included food, medication, and evacuation through bloodletting, scarification, and purgation. However, this toleration for traditional types of treatment did not entail that Marburg students were fully compliant with Galenic remedies. According to Glückradt, scholastic physicians were practising bad therapy for their sole prescription of traditional syrups, potions, pills, and plasters. The only great arcanum they possessed, he deplored, was the stone of Sisyphus.

Such an ambiguous position towards the efficacy of Galenic drugs may find an explanation in Petraeus’s verdict on Galenic therapy and pharmacy. In his inaugural disputation, he stated that physicians adhered to the Paracelsian philosophy because they experienced the limitations of traditional therapeutics, which advocated the “cure by contraries.” In Galenic therapy, diseases needed to be expelled by an adverse remedy that consisted of contrary qualities. For instance, a cold disease was cured by a hot drug, thick humours were removed by “thin” drugs.

By contrast, the Marburg conception of hermetic therapy followed the principle of similitude or “like by like,” which relied on the concordance between the macrocosm and the microcosm. According to Petraeus, the celestial influx of planets and stars within the macrocosm acted on the celestial instantiation of bodies, namely their internal balsam. In addition, natural bodies could act upon each other due to the similar substance of their internal balsam. As Petraeus pointed out, this reasoning was familiar to Galenic physicians through the notion of total

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66 Nolle, “[Disputatio] inauguralis,” 353: “[...] in curatione universali subsidia manualia [...] vel necessario praemitti, vel coniungi. Haec sunt, quae de praestantissima, certissima et tutissima hac medendi methodo dicere volui.”
67 Glückradt, “Disertation inauguralis,” 23–24: “[...] valeant cacochymici omnes, empirici, agyrtae, impostores et balatrones, qui delictis suis furca dignis male apud vulgus imperitum te audire faciunt: maneat usus, tollatur abusus.”
68 Glückradt, “Disertation inauguralis,” 40: “[...] speculativam artis rationem ad experientiam, generalem cognitionem et methodum in universalibus, ad exercitationem in singularibus traducite [...]”
substance, which Fernel emphasised in *De abditis rerum causis* (1548). This treatise put forward that some traditional remedies, in particular purgatives, acted by similitude of substance instead of the primary and secondary qualities. Their powers operated by sympathy with the body part, for instance, by exerting a magnetic force of attraction on the humour that needed to be purged. Such a force came from their “total substance” related to their substantial form, which Marburg physicians also identified by their balsamic essence.

Nonetheless, Petraeus believed the principle of contrariety acceptable to the extent that it took the sense of “antipathy” towards the morbid substance, and “sympathy” for the body part. Both cases of sympathy and antipathy relied on the similitude of their total substance. Efficacious remedies were similar to the disease in kind, but contrary in species, since they were expected to repel noxious substances through the powers of their essence. For instance, calculus, because it resulted from a coagulated Salt, was also cured by a Salt, but of a solving nature. Fever, stimulated by an inflamed Sulphur, was healed by a Sulphur of an acidic and cooling nature. While these remedies acted by similitude of their total substance, they were contraries through their substantial form. This principle, Petraeus recalled, was established by the medical tradition, from Aristotle and Galen, to humanist physicians like Argenterio and Fernel. For this reason, Petraeus acknowledged Galenic simples that were valued for the properties of their total substance. For instance, rhubarb dissipated bilious fever by repelling the obstruction of matter.

Petraeus added that the specific properties of plants were also evidenced by their remarkable “signatures.” The latter were rooted in the ancient theory of *signatura rerum*, which postulated the medicinal powers of plants according to their morphological resemblance to the sick body part. In the Renaissance, Paracelsus extended this theory to the animal, mineral, and celestial realms in order to highlight the secret correspondences between the microcosm and the macrocosm. Important Paracelsian authors quoted in the Marburg essays, such as Du Chesne and the German physician Oswald Croll, further diffused the Paracelsian interpretation of signatures in their medical treatises. Following this framework, Petraeus mentioned the example of perforated plants like hypericum (St. John’s wort) which cured ulcers and wounds, as well as stony ingredients which healed calculus. Similarly, the Marburg student Kraius emphasised that the knowledge of the hidden

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71 On purgatives and sympathy in Marburg pharmacy, see Moran, *Chemical Pharmacy*, 62–74.
72 Petraeus, “Disputatio inauguralis,” 142.
73 Petraeus, “Disputatio inauguralis,” 141: “Quinimo similia dici merentur pharmae, quoniam similibus, et iisdem signaturis, imaginibus, et formis insignita sunt, in quibus ad partes, morbosque collatis vera et vitalis eorum anatomia sita est, ostendens coniungere, quae sunt coniungenda secundum naturam.”
75 Joseph Du Chesne, *De priscorum philosophorum verae medicinae materia* (Saint-Gervais: Eustache Vignon, 1603), 70–130; Oswald Croll, “Tractatus de signaturis internis rerum, seu de vera et viva anatomia maioris et minoris mundi,” in *Basilica Chymica* (Frankfurt: Claude de Marne, Jean Aubry, 1609).
properties, sympathies, and antipathies between animals, plants, wood, stones, minerals, gems, and metals was the core of “true” medicine.\textsuperscript{76}

In addition to endorsing the Galenic therapy of the total substance, Petraeus more broadly accepted the use of simple and compound drugs in determined cases. In his view, mild diseases were easily treated by means of common plants, syrups, decoctions, and oils. Petraeus even admitted that simples were safer and more convenient in the case of minor ailments. On the other hand, serious diseases could only be cured by extracted tinctures of “arcana,” namely by the hidden powers of balsamic substances obtained by chymical extraction. When it came to prescribing the right treatment, the “prudent” physician should follow therapeutical indications, such as the nature of the disease and the constitution of the patient.\textsuperscript{77} These indications, in turn, would point to the legitimate preparation of remedies. Consequently, for Petraeus, it was incumbent upon the physician’s mature judgement to decide whether to choose a decoction or a distillate, an infusion or an extract, a simple or a compound.

From this Paracelsian yet Galenic-tolerant interpretation of therapy, Petraeus concluded that \textit{chymia}, as the necessary source for the contemplation of nature, was the “soul” of physics. Nonetheless, if the hermetic interpretation of nature left the adept perplexed, he could still turn to the method of healing which the Galenic physicians inherited from Hippocrates and Galen. For Glückradt as well, budding physicians needed to keep this rational method in mind during their training in chymical secrets, recipes, processes, and experiments.\textsuperscript{78} Students in \textit{Chymiatria} were, indeed, advised to remain aware of the thin line between remedy and poison.

**Universal medicine, poisons, and antidotes**

If the Marburg disputations shared the traditional conception of therapeutics through particular remedies that aimed to heal specific body parts and diseases, they also suggested the existence of a “universal medicine” for all diseases. This theme was tackled by Glückradt in his dissertation \textit{De medicina universalis} (On universal medicine) published in 1616. He first considered the many Paracelsian wonder drugs on the medical market, such as the panacea of Georg am Wald. Although he acknowledged the efficacy of these drugs, he believed that they did not equal the power of universal medicine as the fruit of “true” chymistry.\textsuperscript{79} The universal medicine to which Glückradt and most of the Marburg students referred

\textsuperscript{76} Kraius, “Dissertatio pharmaceutica,” 63–64.


\textsuperscript{78} Glückradt, “Disputatio inauguralis,” 40: “[…] arctissimo foedere connectite, non solis secretis, processibus, receptis et experimentis in hiate, scientes et ponderantes id, quod Galenus […] addicit, medicamenta veluti deorum manus esse, si is qui eis utitur in rationali methodo fuerit exercitatus […].”

\textsuperscript{79} Glückradt, “Dissertatio inauguralis,” 22–23: “Panaceas etiam nostris temporis medicorum (qualem habuit Am Waldus) iam non recenseo, quibus universalis medicinae potentiam aemulantur, proximeque adequant, ut non amplius sit, quod de catholico quodam naturae confortativo dubitare queamus.”
was defined as balsamic to the extent that it was made of balsam and cured the body’s internal balsam.

For Glückradt, balsam juice was present in a broad range of healing products. These were listed in the traditional pharmacopoeia, which comprised medicinal food (wine, grain, honey), animal substances (mummy, blood), metals (gold, silver, mercury, and antimony), minerals (vitriol, sulphur, niter), and precious stones (pearl, coral, and the alleged bezoar “stone”). Although most of these ingredients were already present in Galenic pharmacy, they were integrated into a different approach to pharmaceutical preparation, which was based on mineral and metallic compounds by means of “spagyria,” that is, the Paracelsian art of chymical separation. As Glückradt explained, if simple and compound drugs were made following the hermetic conception of therapeutics, they would make obsolete Renaissance pharmacopoeias and their exotic yet ineffective ingredients.

Based on balsamic ingredients, the universal medicine of Glückradt was also presented as a “catholic” and “analeptic” remedy. While “catholic” was another term for “universal,” the name “analeptic” referred to an ancient category of drugs which was part of the class of antidotes. Glückradt’s terminology was also inspired by the 

Medicina universalis (1610) of the German physician Johann Wolfgang Dienheim (1587–1635), professor of medicine at the University of Freiburg. Dienheim was known for his report, in the penultimate chapter of his treatise, of an alchemical transmutation performed by the Scotsman Alexander Seton in the presence of the Swiss physician Jacob Zwinger. In the rest of his treatise, Dienheim advocated a medicina catholica able to cure all diseases. If Glückradt adopted Dienheim’s terminology, he followed his supervisor Petraeus in identifying the universal medicine with the Paracelsian balsam and the Galenic radical moisture. In his view, this powerful remedy was made of the “quintessence” obtained by alchemical separation. Presented as the equivalent of balsam, the notion of quintessence put forward the idea of an incorruptible entity of celestial origin with strong healing powers, which was enclosed within the material envelope of beings but could be extracted by distillation.

By insisting on the celestial nature of balsam as a quintessence, Glückradt recalled that its divine origin traced back to Genesis. Following Dienheim’s

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81 Glückradt, “Dissertatio inauguralis,” 37: “[...] chymica tot remediorum formulas simplices et compositas excogitavit, vana et inutilia sunt omnia dispensatoria et antidotaria, claudenda erunt pharmacopelia superbis pyxidibus exornata, frustra remedia a mari rubro, ex Indis et Arabia petuntur, in uno sunt omnia, omnia in uno.”
83 Glückradt, “Dissertatio inauguralis,” 7: “[...] revera dari quintam quandam [...] essentiam praeter et supra communia elementa cui post formam actiones vitales praeipue ascribendae sint, eamque reapse separari posse, et debite praeparatam, ab impuritatibus liberatam, legitimeque administratam sanitatem conservare [...].”
formulation, he considered the analeptic cure as an “Adamic” medication in the sense that it owed its powers to the divine blessing during the Creation.\textsuperscript{85} The divine verb breathed this quintessential nature into the seed of animals, vegetables, and minerals.\textsuperscript{86} However, Glückradt explained, the ejection from the Garden of Eden denied Adam and Eve any access to the tree of life.\textsuperscript{87} After the Fall, medicine was created as a providential gift from God to humankind. From this, we can infer that balsam was the closest mundane instantiation of the tree of life, which was praised by Marburg physicians for its restorative and curative properties. The same view was emphasised by Petraeus, who defined the objective of chymistry as the restoration of substances to the original perfection of prime matter at the Creation by extracting the celestial essences enclosed in an impure shell.\textsuperscript{88} Besides the reference to Genesis and the tree of life, the religious dimension of chymical medicine was also suggested by the very term “balsam,” which initially designated a Middle Eastern tree often praised in the Scriptures for its fragrant and healing virtues.

Despite Glückradt’s attempt to offer a consistent explanation following Paracelsus, Galen, and the Scriptures, his analeptic medicine showed some limitations, especially regarding its universal character. The \textit{medicina catholica} appeared to be composed of various ingredients and did not point to one single remedy or recipe. What these healing substances shared in common was their powerful properties coming from their quintessence that was extracted by the spagyric art. The same vagueness was discernible in Nolle’s argument, which suggested the existence of a universal medicine made of earth and water but did not provide further details on its nature.\textsuperscript{89} Instead, Nolle referred the reader to his 1616 \textit{Compendium} about earth as the prime matter of universal medicine. Yet, he acknowledged that many Paracelsian physicians put forward different ingredients, mostly of mineral origin, such as gold, silver, precious stones, antimony, vitriol, and mercury, for making the universal medicine.\textsuperscript{90}

Beyond the lack of determination concerning the formula of universal medicine, most chymiatric essays recommended various remedies for a great range of diseases, as shown by the two volumes of Petraeus’s \textit{Nosologia}. Glückradt himself followed


\textsuperscript{87} Glückradt, “Dissertatio inauguralis,” 26: “Neque etiam inficias eo ante lapsum in illa vere aurea acate, in horto nempe delitarum sive paradiso fuisset universalem quandam prophylacticae, lignum nempe, seu arborem vitae ex qua vescentes primi homines ex Dei ordinatione sibi prospiciebant […].”

\textsuperscript{88} Petraeus, “Disputatio inauguralis,” 159–60: “Omnia quidem a Creatore perfecta sunt in materia prima, sed chymicus naturam per naturam movens, amica coniungens, adversa disiungens, et agentia patientibus imitatione naturae accommodans materiam secundam ad ultimam perfectionem deducit […].”

\textsuperscript{89} Nolle, “[Disputatio] inauguralis,” 352–53.

the medical tradition by acknowledging the impossibility of obtaining a single remedy and prognostication for all diseases and patients. He added that some sicknesses could be incurable and fatal due to diverse factors. As for external diseases, for instance wounds, fractures, dislocations, and hernias, they could only be cured by the skilful hand of a surgeon because they were not caused by a disease affecting the body’s internal “root,” that is, the physiological principle of life.

In this sense, Marburg universal medicine functioned rather as a strong drug in the same way as Galenic theriac, mithridate, antidotes, and alexipharmaka. In fact, this category of remedies was within the scope of the Dissertatio pharmacologica, which the Marburg student Johannes Kraius held in 1615. Similarly to his fellow student Glückradt, Kraius anchored the origin of disease and medicine in the Genesis. The “garden of delights” (hortus delitiarum), which enclosed the tree of life (arbor vitae), was exempt from sickness and poison. In this Edenic state, every essence abounded with divine perfection and goodness. However, the perfect condition of humankind was put to an end after the Fall, which brought poisonous affections and pestilence on earth. For Kraius, it was the divine mercy which, in turn, provided medicine and healing substances to cure them.

If pestilence was considered to have a divine origin traced back to the Fall, it was also characterised by an astral causation, an airborne propagation, and a poisonous nature, as had long been discussed in Galenic medicine. On this point, Kraius likely interpreted Fernel’s explanation of pestilence and the total substance in De abditis rerum causis in Paracelsian terms. As expounded in his disputation, the outbreak of violent affections was caused by a strong planetary aspect, especially between Mars and Saturn. More broadly, the “celestial machine” (coelestis machina), that is, the Zodiac, brought corruption by producing impurities through the sun, the moon, and malignant stars. These heavenly bodies, in turn, corrupted all elements within their orb. Their celestial “impressions,” Kraius explained, propagated sickness on the inferior sphere, that is, the earth, by polluting the air with “tinctures” of poisonous substances such as arsenic and hellebore. The intoxicated air further contaminated the body’s vital principle. On this point, Kraius revealed his Fernelian interpretation of poisonous affections by ascribing them the destruction of the

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91 Glückradt, “Dissertatio inauguralis,” 38: “In hoc censu cumprimis sunt ipsorum etiam confessione, qui ipsius speciei radici profundius adhaerescunt, […] ideoque a medicina universali quantumvis sanationem recipere nequeunt, ad quam nullam habent dispositionem, et aptitudinem.”


95 Kraius, “Dissertatio pharmaceutica,” 42–43 and 47.

body’s substance through their malignant “species,” that is, their substantial form. They did so by quickly and violently attacking the heart as the source of innate heat.

Following his fellow Marburg colleagues, Kraius stated that poisonous and pestilential diseases could be healed by a “divine” antidote. As balsamic remedies, antidotes fortified the body by sympathy with its vital principle while opposing the noxious action of poisons by antipathy with their substance. Both preservative and curative, antidotes were available in a form which could be universal or particular, internal or external. They cured diseases in multiple ways established by the medical tradition, for instance, through comforting, expelling, or altering properties. Among generic antidotes, Kraius included Galenic products, from compounds like theriac and mithridate to simples such as gems (emerald), clay (terra sigillata), plants (rue, gentian), and a series of less common ingredients like antler, bezoar, and unicorn. He also listed specific antidotes from Galenic pharmacology, such as castoreum for opium, gentian for hemlock, and citrus seed for euphorbia.

Besides countering poison, antidotes could render the body immune to toxic effects, as testified by the ancient practice of mithridatism. For Kraius, poisons could be softened by a technical preparation leading to idiosyncrasy, that is, the body’s progressive acquisition of a different nature. Such a practice gave successful examples that were reported by Aristotle, Galen, and Renaissance physicians like Cardano and Scaliger, in the case of poisonous plants and animals. Considering such a longstanding practice of mithridatism, Kraius concluded that the most beneficial antidote and divine medicine hid as a “treasure” within the most noxious poison.

The well-known phenomenon of mithridatism was particularly important for Kraius because it justified the chymical preparation of antidotes while debunking any suspicion of toxicity. Kraius first took the example of vipers, which entered into the composition of theriac and antidotes. Considered efficient and safe in Galenic medicine, the snake-based antidotes cured allegedly incurable diseases such as leprosy, syphilis, and dropsy. However, Kraius pointed out, if snakes were subject to the separation of their purest essence from their impure material by means of spagyria, they would give a more efficacious balsam with restorative virtues. In the same way, the powers of the Galenic diagridium, a compound based on scammony, could be alchemically tamed by an acidic correction, which restrained its ferocious “spirits.”

Following this reasoning, Kraius considered toxic minerals and metals to be the basis for strong drugs and antidotes. This was only possible thanks to their

97 Kraius, “Dissertatio pharmaceutica,” 49: “Nulla enim morbi quantumvis extreimi, acutissimi et truculentissimi species reperiri potest, cui non opposuerit Deus medicinam tam praeservativam quam curativam, universalem aut particulararem, internam et externam […].”
99 Kraius, “Dissertatio pharmaceutica,” 57–58: “Sed omnem plane admirationem excedit serpentum, inprimisque viperarum mirabilis natura, […] ex illis tamen ipsis non modo adversus omnis generis venena tutissima alexipharmacca, verum etiam certissima medicamenta balsamica leví negotio elaborantur […].”
100 Kraius, “Dissertatio pharmaceutica,” 52 and 59–64.
preparation, which consisted in the chymical separation of their healing essence from their poisonous material. As Kraius pointed out, the making of powerful remedies through the “elixiation” of poison after its “fixation” in the fire had previously been emphasised by Paracelsian physicians like the English Thomas Moffett (1553–1604) in the short dialogue De iure et praestantia chymicorum medicamentorum (On the authority and excellence of chymical drugs, 1584). For Kraius, the preparation of subterranean minerals and metals such as arsenic, antimony, mercury, and alum supplied “wagons of unequalled drugs.” For instance, arsenic provided an antidote to “arsenical” ulcers such as gangrene, cancer, and syphilitic fistulas. Moreover, chymical substances like saltpetre and vitriol could be noxious and corrosive when combined but salutary if prepared separately for medicinal purposes. Kraius compared their powers to secluded prisoners in a mixture of thick elements. Their separation revealed a crystalline and pearled matter, namely the balsamic essence.

To his explanation of poisons and antidotes, Kraius concluded that the extraction of the balsamic essence from toxic minerals was the main motivation and reward of the chymical labour. “True spagyrians” (veri spageiri) dedicated a lot of time, study, and money to developing their skills in the resolution or “analysis” of materials. In order to elucidate the many secrets of this art, they needed to do proper experiments with their own hands. Travelling to distant regions was also necessary to conquer the hidden arcana of medicine and chymistry. In such a quest for art and science, Kraius praised the chymatria of Du Chesne, who shared many secrets in his pharmaceutical works. The latter included formulas of chymical remedies in various forms, from salts, flowers, and spirits to balsams, tinctures, and elixirs.

With these glowing terms about Du Chesne, Kraius alluded to the Pharmacopoea dogmaticorum restituta (The Restored Pharmacopoeia of the Dogmatics, 1607), which presented alchemical operations and recipes of Galenic remedies along with a series of Paracelsian drugs in the last chapter. Interestingly, Du Chesne explained in this treatise that his own conception of pharmacy was modelled after the physicians at the court of the landgrave Moritz von Hessen–Kassel, whom he visited around 1604, at the invitation of Hartmann. In his turn, Kraius noted that the medicinal preparations of Du Chesne were at the

103 Kraius, “Dissertatio pharmaceutica,” 61: “Subterranea mineralia et metallam veneni suspicione nunquam non labovarunt: si Vulcano adminiculante in tria principia [...] rite dissolveris, incomparabilium medicaminum plaustra indolem parentum generosissimam potenter referential deprehendes.”

104 Kraius, “Dissertatio pharmaceutica,” 64–65: “Quem in finem quoties secretorum huius artis experimentera propria sua manu facit? [...] Quoties priscorum philosophi peregrinationes discendi desiderio susceptas imitatus, [...] in varias, longeque dissitas regiones, qui latenta medicinae et chymiae arcanac hinc inde conquiritur, non sine impen-sis maximis emisit?”


centre of the practical sessions at the Marburg public laboratory (*laboratorium publicum*), where Hartmann taught the hermetic works of art (τεχνούργηματα). During these sessions, students had the opportunity to apply the Galenic–Paracelsian conception of balsamic medicine to their preparation of “chymiatric” drugs.

**Conclusion**

During its short existence, the *chymiatria* chair at Marburg launched an unprecedented academic experience. While many universities in Europe were torn in controversies over the legitimacy of chymistry and its implementation in the medical faculty, the “small” University of Marburg offered a pioneering programme dedicated to chymical medicine. In this sense, the *chymiatria* chair worked as a proof of concept regarding the feasibility of implementing chymistry in an academic environment, despite the subversive position of the Paracelsian system regarding the medical tradition. For Petraeus as a physician and a professor, as well as a student of Hartmann, this project needed to be applied by harmonising the Paracelsian medicine with the Galenic philosophy from a “hermetic-dogmatic” perspective. Petraeus framed the compromise within the scholastic framework of printed disputations and dissertations. The latter discussed the Paracelsian interpretation of health, disease, and treatment through a number of theses which clarified its terminological and conceptual stakes.

Although chymistry was commonly seen as an ancillary discipline to medicine for pharmaceutical purposes, Petraeus also considered it an art and a science which provided a theoretical framework for understanding the properties of bodies and the relationship between the microcosm and the macrocosm. His medical theory followed the Paracelsian explanation of physiology as a constant process of digestive separation which was responsible for health by maintaining the life principle, the “internal balsam.” Following this reasoning, disease was the product of the incorrect separation of food which produced “tartar” as a generic term for a broad range of toxic humoral residues. Treatment consisted of separating these noxious humours and restoring the internal balsam through drugs that were prepared by distillation. Promoted as an improvement on Galenic pharmacy, the chymical drugs were composed of minerals and metals whose toxicity was tamed during their separation. With this medical approach to treatment, Marburg disputations continued the path initiated by Paracelsian physicians who expounded on balsamic therapy, such as Du Chesne, Moffett, and Dienheim, among others.

To this Paracelsian framework, Marburg explanations added the Galenic approach to humours, digestion, and the method of treatment, following Renaissance medical interpretations which emphasised the celestial dimension of the living body. On this point, the argument implicitly relied on the Paracelsian account of Severinus, who suggested the compatibility of Paracelsianism and Renaissance Galenism. Following this view, the Galenic philosophy of Jean Fernel served as a missing link between Paracelsus and Galen, especially to explain the celestial origin and chymical embodiment of the vital principle. By merging Fernel’s interpretation of innate
heat and radical moisture with the notion of balsam, the Marburg essays emphasised the hidden properties of bodies, such as the similitude of substance and the “signatures,” which were associated with their essence. The celestial origin of the chymical essence also put forward the religious implications of balsamic medicine as a way for adepts to recover the perfection of the divine creation.

In coupling the Paracelsian and Galenic approaches to body and treatment, Petraeus provided a theoretical framework for understanding the healing powers of the chymical drugs that students prepared during the practical sessions at the laboratory under the supervision of Hartmann. While the latter paved the way for the introduction of chymistry into the medical curriculum and drug making, Petraeus completed this project by updating the current conception of healing and method of treatment in a way that was intelligible and reliable to learned physicians and practitioners.

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