

Articoli/Articles

GENETICS AND GENERATION IN THE *FUNDAMENTA
MEDICORUM* OF ÁLVARO DE CASTRO:
EVALUATION OF THE TERMINOLOGY AND SOURCES

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SUMMARY

*In this article we analyze the terminology related to Generation and, so to say, to Genetics compiled in the *Fundamenta medicorum* by the physician Álvaro de Castro, and the sources from which the terms and the concepts were extracted. This work is a voluminous book having the structure of a dictionary or concordance in which the basic concepts of Medicine are collected. The work, which remains unpublished in a manuscript preserved in the Toledo Chapter Library, was written in Latin in the early sixteenth century by Álvaro de Castro, a converted Jew from Toledo. In his *Fundamenta* the author used Ancient, Medieval and Renaissance medical sources.*

Introduction

As we all know, the relationship between Ancient Medicine (and its Medieval and Renaissance forms) and modern medicine is complex and controversial, specially when ancient medical concepts are outdated today, or they have completely changed. This complexity and difficulty become very evident when we undertake the diachronic study of terminology designating very different concepts.

In the case of Genetics, a discipline developed mainly in modern times, we must consider, for example, that the term *cancer* may belong to this discipline today, but not with its ancient usages; and

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ancient terms and concepts as *complexio/temperamentus* belong to what might be considered the field of Genetics in the past, even if these terms are not used in today's Genetics.

In order to fulfill a diachronic study of medical terminology, it is basic to access and also to know the Medieval and Renaissance texts, which increased the development and dissemination of medical terminology throughout Europe because of many factors. In the case of the Renaissance, few texts are being currently studied and even less are being edited. In respect to this, a key instrument for the study of medical terminology, along with the access to the texts, are dictionaries and compilations of terminology, and not only modern dictionaries, but also Medieval and Renaissance ones, printed or handwritten. They reflect well the changes or the continuity and preferences in the use of terminology.

This can be applied to the work that concerns us here, which provides a comprehensive overview not only of the medical doctrine, but also of the medical terminology used between the late fifteenth and early sixteenth centuries, and which includes the field of Generation and what we understand as Genetics.

Life and times of Álvaro de Castro

About the life of physician Álvaro de Castro very few details are known, except those he offers in his handwritten works¹. Thus, the *praefatio* of his *Ianua vitae* and some fragments of *Fundamenta medicorum* inform us that he came from Toledo and lived in Santa Olalla, that he was physician of the Count of Orgaz, Álvaro Pérez de Guzmán, and that besides Santa Olalla and Toledo he also practiced Medicine in Escalona. He belonged to an important family of converted Jews, who exiled to Lisbon because of the expulsion of 1492 from Spain, but who returned to Toledo few years later after having converted to Catholicism. He left three handwritten works that his grandson, the famous humanist Alvar Gómez de Castro donated to the Cathedral

of Toledo². These works form a coherent collection that includes the fundamental aspects of practical Medicine, specially Therapeutics. The first one, *Ianua vitae* (mss. 97-8 / 9 of the Cathedral of Toledo) is an extensive compilation of simple medicines, sorted alphabetically and with the sources providing the data. It was written before 1526, since it includes an approval for being published of this year. Probably the *Antidotarium*, about compound medicines (ms. 97-10 of the Cathedral of Toledo), was a continuation of the previous one. And finally he composed the *Fundamenta medicorum* (ms. 97-7 of the Cathedral of Toledo), which repeatedly mentions the first of these works, showing that *Fundamenta* was written after it.

The *Fundamenta* comprise more than 500 sheets having the form of a dictionary or rather a *concordantia* alphabetically arranged, collecting, as the title indicates, the fundamental concepts of Medicine and including in each lemma or concept some fragments of medical works explaining and defining them. It is preceded by a nuncupatory epistle to his son Diego, in which the author explains that he collected these concepts to facilitate the memory of his son, who had lost it after a disease. Obviously, this is a fiction that serves as a pretext to justify the work and, more importantly, to frame it in an academic and didactic genre of writings devoted to learning Medicine, such as for example the *Concordantiae* of Jean de Saint Amand and of Pierre de Saint Flour³, although *Fundamenta* was written later. This work includes in its 521 sheets many basic concepts of Medicine related to Pathology, Anatomy, Physiology, Therapeutic, Dietetics, Diagnosis and Prognosis, and other concepts related to ambience and human nature. Explanations concerning certain lemmas also allow him to treat concepts related to them but other than them, as *cacexia* in *abstinentibus* or *calor naturalis* in *anima*. There are also medical records, such as those concerning Antiochus or Antoninus, obtained from Galen's writings; and explanations regarding prominent figures of Medicine, like Hippocrates, Galen, Avenzoar or Averroes.

The work has not been published and is hard to be studied. In addition, many remarks we find about it are inaccurate or incomplete. For example, the work has been defined as a compilation about Pathology⁴, where the author explains symptoms and characteristics of different diseases and their treatment. But, as we have seen, the contents and terminology collected far exceed the specific field of Pathology, and the title of the work itself reflects a broad topic.

Medical terminology and sources are the two fundamental aspects defining this work, which are closely related to the didactic gender to which it belongs. The terminology is valued as a basic instrument of knowledge of Medicine. Therefore it is frequently accompanied by lexical glosses and definitions, as usual in didactic writings of Medicine. Both glosses and definitions are used to clarify concepts that could be found in medical texts under different names.

The other remarkable aspect in the Álvaro de Castro's *Fundamenta medicorum* are the sources providing the concepts. These sources, very abundant, are the writings used to teach Medicine in the Late Middle Ages, and still in the early sixteenth century at the time of transition to the more refined medical texts provided by philological Humanism⁵. Álvaro de Castro is, in this respect, a man of medieval education, what can be clearly seen in the texts that he used and cited.

Sources of Fundamenta medicorum

The sources used in the work are, therefore, determined by the time of the author's life and particularly of his medical training. Thus in his *Fundamenta* we find the best examples of Ancient, Medieval and early Renaissance Medicine. In the case of Genetics and Embryology, the terminology is extracted from the following writings: first of all, the *Corpus Hippocraticum* and the *Corpus Galenicum*, which are quoted, as all the fragments we have analyzed suggest, from the *Opera Omnia* published in 1525 (translated by Fabius Calvus) or 1526 (by Calvus and others), and from the edition of Diomedes Bonardus in

1490 (in anonymous translations or by several authors), respectively. More particularly, there are fragments from the Hippocratic writings *De genitalis seminis natura*, *De pueri natura*, *De feminea natura*, *Afforismi* and the *Epidemiorum libri*. The Galenic writings are not as specific as those mentioned: *De iuuamentis membrorum*, an anonymous translation from Arabic, although Castro also uses the title *de utilitate particularum* referring to the version of Niccolò da Reggio; *De complexionibus* translated by Gerardus Cremonensis, *De colera nigra* by Pietro d'Abano, *De tumoribus preter naturam* by Niccolò da Reggio, and the commentaries *In Hippocratis Aphorismos* and *In Hippocratis Epidemiorum libros*. Other anonymous writings ascribed to Galen are also present: *De spermate* again translated by Niccolò da Reggio, and *De compagine membrorum siue de natura humana*. We also find Arabic medical writings, or rather their Latin translations widespread in Western Europe: Avicenna's *Canon* (translated by Gerardus Cremonensis), Haly Abbas (*Practica Pantegni*, translated by Constantinus Africanus), Rhazes (*Continens*), Mesue (*Canones uniuersales*), Iohannes Damascenus (*Aphorismi*), Averroes (*Colliget*), Avenzoar (*Teisir*). The *Dietae particulares* and *uniuersales* of the Jew Isaac Israeli are also mentioned. And western Latin authors and commentators: Pietro d'Abano (the *Conciliator differentiarum*, and the *Expositio Aristotelis Problematum*), Albertus Magnus (the commentaries on Aristotle's *Physica* and the apocryphal *De secretis mulierum*), Arnaldus Villanovanus (*Speculum medicine* and the commentaries about the *Regimen sanitatis Salernitanum*). Aristotle (*Problemata*, *De animalibus*, *De generatione animalium*, *De inspiratione et respiratione*, *Metaphysica*) is frequently quoted indirectly through medieval commentaries.

Generation and Genetics: terminology

Concerning the specific terminology referred to Generation and Genetics collected by Castro, the classification and the evaluation must

be made according to two parameters since the work is a concordance: the lemma and the doctrine developed about a particular concept. Sometimes a lemma may not be as relevant as the context reproduced below: for example, the entry *apes*, where a kind of resurrection is described. On the other hand, some lemmas have several entries, while others have only one. Some of them include the complete reference of the cited work, while others just its author's name without any further reference. Finally, because of the modern nature of Genetics, most of the terms are more related to Generation conceived in classical terms. When we cluster the lexical concepts, we find terminology referred to⁶:

a) *Basic concepts of Generation:*

- *Conceptio/concipio:*

Conceptionis. Hip<pocrates> 5^a affo<rismorum> affo<rismo> 62 ait: si mulieri purgationes non exeunt, neque febre neque rigore superueniente, anxietates abominaciones et defectiones animi ei acciderint, reputa hanc in utero habere. Gal<enus> in commento ait...

Concipiendi ablatio est ex mala complexione matricis aut ex morbo officinali aut de humoribus in concauitate vulue se coadunantibus ex mala complexione ... Ysaac 9 Theor.<ice> ca<pitulo> 42⁷.

Concipiendi ablatio propter masculum ex mala complexione est spermatis, aut morbo officinali ... Ysaac in nono *Theorice Pantegni* cap^o 42.

- *Aborsus, abortare:*

Aborsus dolores vehementiores sunt doloribus accidentibus post partum ut inquit Auicenna 21^a tertii tract<atu> 2^o capitulo 8 dicen<s>[tem]: et dolores quidem accidentes apud aborsum vehementiores sunt doloribus accidentibus post partum. Quum illae sunt res non naturales. Causas aborsus ponit Auicenna loco allegato et tu ibi⁸. Et Hippocrates in libro *de pueri natura et in de feminea natura*.

Aborsum causat pregnantibus ministrare flebotomiam ut patet per Hippocratem 5^a *affo*. affo. 29 di<centem>: mulier in utero habens flebotomata aborsum facit. Sed magis cuius maior est fetus. Littera *flebotomia multotiens*.

- *Embryo*⁹:

Embrionis nutrimentum est ex sanguine qui descendit ad vuluam. Et quia ipse Gal<enus> nominavit dictum sanguinem sanguinem menstruaem, putauerunt aliqui sapientes quod nutriatur embrio a sanguine menstruali, sed non est ita. Tamen Galenus sequitur vestigium et consuetudinem Grecorum qui vocant omnem sanguinem descendantem ad vuluam menstruaem. [...] Sciendo pro certo quod si embrio ex tali sanguine menstruali nutrietur, sicut est ille qui expellitur et purgatur a mulieribus, non viueret ullo modo. Immo nutritur embrio ex sanguine valde laudabili etc. Auenzoar 3^a *Teisir* trac. 3 cap^o ultimo¹⁰.

Embriones enim nutriuntur ex sanguine menstruo delato ad ipsos per venas et arterias umbilicales. Auicenna.

- *Fetus*¹¹:

Fetus in utero quomodo crescat. Hip<pocrates> in lib<ro> *de pueri natura* inquit: Quod autem semen, cum in membrana aut pellicula inest, respirat, certum est, sanguineque de matre in vuluas descendente crescit, et augetur, quoniam, cum femina concepit, menses non defluunt aut descendunt (si quidem fetus sanus futurus est), preter quam pusillum quibusdam primo mense, sed sanguis ab uniuerso femine corpore descendens circum membranam extrinsecus consistit, spirituque in membranam trahitur, qua pertusa est et patet, quo condensatur, quodque animal futurum est, crescere facit, et adolescere, etc.

Generationis *sic* fetus dicit Auicenna *hoc* mo<do>: quod in generatione fetus ex spermate primo generantur tres ampulle: ex prima cor, ex secunda cerebrum, et ex tertia epar¹².

b) *Generative principles:*

- *Male and female sperm:*

Feminam utriusque sexus semen habere patet per Hippo<cratem> in lib. *de seminis genitalis natura*, unde *sic* dicit: cum vero frigefactum constringetur, tunc seuum a cera copia et multitudine superari cognoscetur, *sic* maris et femine semen habet, quod etiam ex his manifestis signis coniectari licet, semen marinum et femineum in viro et in femina inesse. Etc.

Mulier ita spermatizat sicut vir. Littera *sperma ita mulieres emittunt*.

- *Planetary influences:*

Conditio omnis geniture mundane ex planetis eorumque signis tamquam ferrum ex lapide magnete dependet sicut dicitur in lib 9^o iudiciorum (*sc. iudicum*)...¹³

Eclipsis solis qui accidit. Rabi Moyses in principio particule 24 ait: dixit Porphyrius supra terras Sicilie accidit eclipsis solis magnus. Et illo anno mulieres terrarum regionis ipsius filios deformes habentes duo capita generarunt...¹⁴

- *Divinity:*

Creationis membrorum. Gal. in *de iuuamentis membrorum* dixit: intentio Dei in creandis animalium membris fuit tribus modis: quedam pars ut viuerent animalia per ipsam, sicut cerebrum, cor, epar. Altera ut bene viuerent per ipsam, sicut oculi, auricule, manus, et pedes, et similia. Alia quibus generantur animalia ut testiculi.

- *Earth:*

Generari hominem ex terra dicit Auicenna in 2^o *Meta*¹⁵. esse possibile. Sed falsum ut patet per Auerroem 8^o *Phisi*¹⁶. in confutatione sermonis Auicenne. Sed fortassis Auicenna respondit taliter

contingere cum nihil esset speciei: tunc enim ipsam producere conaretur omnis natura. Hoc vide supra decimam *Problematum* problemate 13¹⁷.

c) There are also causes of both morphological and behavioural genetic determinism, which produce:

- *Resemblance:*

Fetus similitudinis causa. Hip. in lib. *de seminis genitalis natura* ait. Cum autem ex viri corpore plus in semen quam femine veniat, partus ille pulchrior est, patrique similis: cum vero plus femine veniat, partus ille pulchrior corpore est, matrique similis, etc.

- *Fools, sodomite men or incontinent women:*

Coitus ad generationem proles cauendum est ne fiat tempore ire vel tristitie aut aliarum passionum anime malarum neque subito cum furia, quia talis coitus facit ex sapientibus fatuos generari. x^o *Problematum* problemate 5.

Coitionis retro. Rasis 6 *Afforis*<*morum*> inquit : si quis cum muliere coeat retro, filii qui nascuntur si masculi sint fient sodomite et si vero femine erunt valde incontinentes¹⁸.

- *Male or female gender:*

Conceptionis maris vel femine. Auic. cap^o. de generatione masculinitatis ait: si mulier concipit a die ablutionis, id est perfecte purgationis, usque ad quintum concipit masculum. Et si a quinto usque ad octauum, concipit feminam. Et si ab octauo usque ad duodecimum, concipit masculum. Et si post istum terminum, tales fiunt hermofroditi. Et sic videtur quod terminus bone et vere conceptionis est a die ablutionis usque ad 12 dies inclusiue. Et sic ex dictis istis notatur quod mulieres post purgationem viris coniungi non debent nisi prius lauentur.

Fetus maris quidem in dextris: femine vero in sinistris magis. Hip. 5 *affor*¹⁹.

Generans in latere dextro percreat masculos propter caliditatem suam et sinistro feminas propter frigiditatem suam. Haly 2 *Teg*²⁰.

Mulier in dextra parte concipiens raro feminam pariet. Damascenus²¹.

Concipiens in dextra parte raro femina<m> pariet. Hip. Damascenus. Super hoc vide Arnaldum in *libro de coitu*²².

Masculi in dextra parte generantur: femine vero in sinistra. Hip. in *affo*. Gal. in 6. *Scientiarum*²³. Quia dextra est calidior sinistra.

Masculorum generatio causa est virtus spermatis: et in generatione feminarum est debilitas spermatis. Haly... aui, Hippoc.

- *Genetic characteristics of gender:*

Femella est viro iniustior et imperfectior. Ar. 29 *Problematum* problemate ii...

Mas est longioris vite femella: nisi multo utatur coitu. Arist. in lib. *de generatione animalium* et in 10^o *Problematum* problemate 28.

Mares omnium generum calidiores siccoresque sunt, mulieres vero humidiores. Quod per exordia utrique his generati sunt et creuerunt.

Mares quidem adulti et laborioso vite genere utuntur quo calescunt et siccescunt. Mulieres vero humido magis et desidioso, singulisque mensibus caloris purgationem de corpore demittunt. Hip. *de genitalis seminis natura* lib.

Masculi sunt calidiores et siccores et in quantitate maiores et longiores et fortiores. Et communiter prudentiores femellis.

Mulier non est naturaliter adeo acuti visus sicut est vir, propter euacuationem maiorem deorsum humiditatis menstrualis. 4 *Problematum* problemate 3^o in com^o.

Mulier non est homo sed monstrum in natura. *Litera mulieres plures*²⁴.

Degeneration and Pathology

In this field, Castro has few references to specific diseases such as blindness (in the explanation, he understands the blindness as a congenital defect or disorder)²⁵, some lemmas dedicated to monstrosity conceived as degeneration, and others explaining the concept of inherited disease.

- *Caecitas*:

Cecitatem oculorum causa. Arist. in 31 *Problematum* problemate 5 ait causam defectus et obcecationis oculorum dicens causam esse quia humiditas superflua cum abundauerit in capite, descendens ad oculos coagulat ipsos et oppilat, propter quod prohibet hos recipere virtutem et spiritus visibiles a cerebro. Et hac quidem eadem causa extimandum (*sic*) fieri obcecationem a principio natiuitatis cum humiditas humori<s> superflua multum abundauerit in locis capitis circa oculos. 4^o *Conciliatoris* eadem (*sic*) problemate.

- *Monstra and monstruositates*:

Monstra dupliciter possunt intelligi: aut quia sunt talia quod formam et effig*e*m habeant non humanam, aut quia sperma et menstruum corrumpantur ante perfectam informationem embrionis: ita quod fiat sicut massa carnea que aboriatur propter principiorum corruptionem etc. 4 *Problematum* problemate 13.

Monstruositates ita fiunt in interioribus sicut in exterioribus ut patet per Conciliatorem x *Problematum* problemate 62 dicens: et scias quod sicut fiunt monstruositates in exterioribus, ita etiam in interioribus: quedam enim animalium aliquando habent duos splenes et multos renes, et aliquando facta est translatio ut quod epar sit in parte sinistra

et splen in dextra, sicut dicitur in primo *de historiis*. Similiter est inuenire mirabilem diuersitatem secundum clausum et perforatum in partibus, et pluritatem et paucitatem, sed utrum sit tale unum animal aut plura, diffinitur ex corde. Si unum enim est cor unum oritur animal, quantumcumque variate sint alie partes; et si plura sunt ut duo, duo sunt animalia, quantumcumque sit aliarum partium numerus diminutus.

- *Morbi hereditarii*:

The section corresponding to *morbi hereditarii* offers a term (not a concept) which is not attested in Ancient Latin medical texts:

Morbi hereditarii vero sunt qui ex generantibus propagantur in genito propter impressionem factam in materialibus principiis generationis a corporibus generantium. Qui morbi quantum ad communem experientiam sunt podagra ptisis lepra tinea et baras quod est quedam scabies, et calculus renum et vesice et vena innaturalis oculi que dicitur zebel. Rasis in lib. *Continentis* cap^o. hemorrhoides hereditatem succedunt.

The author does not mention the source providing him the term *morbi hereditarii*. But, as a detailed search shows us, this fragment is extracted from Arnaldus Villanovanus's *Speculum medicinae* (used elsewhere as a source in the *Fundamenta*)²⁶, which in turn is influenced by the medieval Latin translation of the *Canon* of Avicenna, although this last does not use the words *morbi hereditarii*:

Speculum medicinae, 31vb²⁷

Hereditarii (*sc. morbi*) vero sunt qui ex generantibus propagantur in genito propter impressionem factam in materialibus principiis generationis a corporibus generantium. Qui morbi quantum ad communem experientiam sunt podagra et ptisis, et lepra et tinea, et illa scabies quam Arabes vocant baras, et est genus ad impetiginem; et calculus renum et vesice, et vena innaturalis oculi que vocatur zebel in arabico.

Avic. *Canon* I, fen 2, doctr.1, 87a²⁸

Et sunt aegritudinum quaedam, quae in semine haereditantur sicut uutiligo alba et tinea naturalis et podagra, et phthisis et lepra.

Avic. *Canon* I, fen 3, tract. 2, cap. 19 (*De sebel*), 533

Et sebel quidem est ex aegritudinibus, quae haereditantur, et permu- tantur de uno ad alium.

Concerning the *iunctura morbi hereditari*, it is interesting to find out when these terms began to be used together. In Ancient Latin medi- cal texts, there is no evidence of the adjective *hereditarius* linked to *morbis*²⁹. However, we find this *iunctura* regularly used since the 13th century in dictionaries, treatises and compilations such as the *Concordantiae* of Jean de Saint Amand, having a much larger section³⁰, and in Renaissance writings and dictionaries such as Otto Brunfels's *Onomastikon Medicinæ* (Argentorati 1534) or Steven Blankaart's *Lexicon medicum* (Amstelodami 1679)³¹.

BIBLIOGRAPHY AND NOTES

1. See MILLÁS VALLICROSA J. M., *Las traducciones orientales en los manuscritos de la Biblioteca Catedral de Toledo*. Madrid, CSIC, 1942; id., *La obra médica de la familia toledana de los Castro*. In: *Estudios sobre historia de la ciencia española*. Barcelona, CSIC, 1949, pp. 444-454; GÓMEZ-MENOR J., *Algunos datos documentales sobre médicos toledanos del siglo XVI*. Cuadernos de Historia de la Medicina española 1969; 8: 119-168; id., *Los médicos toledanos del Siglo de Oro y su clase social*. Cuadernos de Historia de la Medicina española 1973; 12: 369-392; id., *Los manuscritos médicos de los maestros toledanos Álvaro de Castro y Diego Sobrino*. Cuadernos de Historia de la Medicina española 1974; 13: 15-50; SANCHO DE SAN ROMÁN R., *Notas para una historia de la Medicina toledana*. Boletín de la Sociedad Española de Historia de la Medicina 1970; 10(1): 4-12.
2. A brief description in: MILLÁS VALLICROSA J. M., note 1. See BEAU- JOUAN G., *Manuscrits médicaux du Moyen Âge conservés en Espagne*. In: *Science médiévale d'Espagne et d'alentour*. Aldershot, Ashgate, 1992, pp. 170-215, p. 174.

3. See JACQUART D., *L'oeuvre de Jean de Saint-Amand et les méthodes d'enseignement à la Faculté de médecine de Paris*. In: HAMESSE J. (dir.), *Manuels, programmes de cours et techniques d'enseignement dans les universités médiévales*. Louvain-la-Neuve, FIDEM, 1994, pp. 257-275; ead., *Les Concordances de Pierre de Saint-Flour et l'enseignement de la médecine à Paris dans la seconde moitié du XIVe siècle*. In: WEIJERS O. (dir.), *Vocabulary of Teaching and Research between Middle Ages and Renaissance*. Turnhout, Brepols, 1995, pp. 172-183.
4. Or a 'patología médica', in: MILLÁS VALLICROSA J. M., note 1, 1942, p. 109; and 1949, pp. 448-450.
5. About medical sources, the following studies are fundamental, among others: SABBAH G., CORSETTI P. P., FISCHER K. D., *Bibliographie des textes médicaux latins. Antiquité et haut Moyen Âge*. Saint-Étienne, Univ., 1987; GARCÍA BALLESTER L., *The New Galen: A Challenge to Latin Galenism in Thirteenth-Century Montpellier*. In: FISCHER K. D., NICKEL D., POTTER P. (eds.), *Text and Tradition. Studies in Ancient Medicine and its Transmission* (Studies in Ancient Medicine 18). Leiden - Boston - Köln, 1998; JACQUART D., MICHEAU F., *La médecine arabe et l'Occident médiéval*. Paris, Maisonneuve et Larose, 1996; KIBRE P., *Hippocratic Writings in the Middle Ages*. BHM 1945; 18: 371-412; id., *Hippocrates Latinus: Repertorium of Hippocratic Writings in the Latin Middle Ages*. New York, Fordham University Press, 1985.
6. In the fragments I offer below, which constitute only a selection of all the entries concerning Genetics and Generation, I standardize and regularize capitalization, spelling and punctuation.
7. HALY ABBAS, *Pantegni*. In: *Omnia Opera Ysaac*. Lugduni, 1515 (Latin version by Constantinus Africanus); there was also another version made by Stephen of Antioch: Haly Abbas, *Liber totius medicine*. Lugduni, 1523. Cf. GLICK TH. F., LIVESEY S., WALLIS F. (eds.), *Medieval Science, Technology, and Medicine: an Encyclopedia*. New York, Routledge, 2005, pp. 325-326, with additional bibliography.
8. Avicenna speaks about southern climates and environmental causes of abortion.
9. There are other entries such as *Egressio embrionis ab utero*, *Embrionis generatio*, *Formatio embrionis*, *Generatio embrionis quomodo*.
10. Venetiis, 1490. Latin translation made from the Hebrew by Magister Paravicinus. See THORNDIKE L., *Paravicinus: a Misprint, not a Translator*. Isis 1936; 26: 33-36.
11. Other entries: *Generatio fetus*, *Fetus generatio*, *Fetus formationis tempus*, *Fetus octimestris quare non vivit*.

12. Quotation extracted from *Omnia Opera Ysaac* (Lugduni 1515), *Dietarum particularium liber*, 138ra.
13. This is a quotation from Pietro d'Abano's *Conciliator differentiarum philosophorum et medicorum...*, Venetiis, 1476: *diff.* 10, 3, 14va. In this respect, see SELLER F., *Scientia astrorum: la fondazione epistemologica dell'astrologia in Pietro d'Abano*. Napoli, Giannini, 2009, p. 61.
14. *Aphorismi Raby Moyses, Amphorismi Ioannis Damasceni, Liber Rasis de secretis in medicina qui liber amphorismorum appellatur*, Bononie, 1489, 111v.
15. *Metaphysica Auicenne siue eius prima Philosophia*, Venetiis, 1495.
16. *Expositio commentorum Auerrois super librum Physicorum Aristotelis*, Venetiis, 1492.
17. These mentions of Avicenna and Averroes are extracted from PIETRO D'ABANO, *Expositio Problematum Aristotelis cum textu*. [Venetiis], 1482 (1501, 1520), although they are misinterpreted or misread: 115b ...*quod est contrarium rationi quia nullo modo potest esse equiuocum nisi prius sit uniuocum ad quod reducuntur talia et consimilia: adducit Auer. 8^o physicorum in confirmatione sermonis Auicenne. Unde ait illic 2^o metha. Auicenna cum sua famositate in philosophia dicit hominem generari ex terra esse possibile. Sed fortassis Auicenna respondebit aliter contingere cum nihil esse speciei tunc enim ipsam producere conaretur omnis natura*.
18. *Liber Rasis de secretis in medicina...*, Bononie, 1489, 6, 102, p. 198 (note 14).
19. 5, 48.
20. Haly Rodoan or Ali ibn Ridwan Al-Misri (c. 988 - c. 1061), whose commentary on Galen's *Tegni* circulated in the version of the *Articella* called *Ars commentata*. This commentary was published for the first time in the *editio princeps* entitled *Articella seu thesaurus operum medicorum anticum*, Padua, 1476, and later in Salio's editions. See *The Ars commentata*. In: O'BOYLE C., *The Art of Medicine: Medical Teaching at the University of Paris, 1250-1400*. Leiden-Boston-Köln, Brill, 1998, pp. 128-157; ARRIZABALAGA J., *The Articella in the Early Press, C. 1476-1534*. Cambridge, Wellcome Unit for the History of Medicine - Barcelona, CSIC, 1998. I have consulted the edition *Articella nouissime per excellentissimum Doctorem dominum Hieronymum de Saliis Fauentinum recognita*, Venetiis, 1523.
21. *Amphorismi Ioannis Damasceni*, Bononie, 1489, 138 (note 14).
22. *Opera Arnaldi de Villa Nova*, Lugduni, 1504, 300-302 (*editio princeps*). This work, often ascribed to Arnold of Villanova, is the *Liber de coitu* of Constantinus Africanus. See MONTERO CARTELLE E. (ed.), *Constantini Liber*

- de coitu: El tratado de andrología de Constantino el Africano*. Santiago de Compostela, Univ., 1983.
23. *Aphorismi Raby Moyses*, Bononie 1489, 16, 81v (note 14): *Masculi frequenter concipiuntur in latere dextro matricis femineque in sinistro, et raro accidit contrarium, sexto scientiarum. Liber scientiarum* is the name given by Maimonides to the Galen's *De interioribus* or *De locis affectis*. Cf. PAGEL J. L., *Maimuni als Medizinischer Schriftsteller*. Leipzig, G. Fock, 1908, p. 234.
 24. BARRAGÁN NIETO J. P., *El De secretis mulierum atribuido a Alberto Magno: Estudio, Edición Crítica y Traducción*. Porto, Brepols, 2012.
 25. Nevertheless, in the entry *Cancer* the cause of this disease is attributed to an excess of melancholy, without reference to hereditary factors: *Cancer a melancholico nascitur humore...*
 26. The same source is used in a similar fragment of an anonymous *Summa medicinae*: cf DE LA ROSA CUBO C. (edited by), *Summa Medicinae (Mad. Esc. M. II. 17)*. *Estudio y edición crítica*. Universidad de Valladolid, 2000 (doctoral thesis). Concerning *podagra* and *phthisis* as congenital diseases, see Hp., *Prorrh.* 2, 5.
 27. *Opera Arnaldi de Villa Nova*, Venetiis, 1505.
 28. I have consulted the edition *Auicennae... Canon medicinae... Ex Gerardi Cremonensis versione et Andreae Alpagi Belunensis Castigatione, A Ioanne Costaeo, et Ioanne Paulo Mongio Annotationibus iam pridem illustratus*, Venetiis, 1608.
 29. Cf. *ThLL*, s.v.
 30. PAGEL J. L., *Die Concordanciae des Johannes de Sancto Amando nach einer berliner und zwei erfurter Handschriften zum ersten Male herausgegeben, nebst einem Nachtrage über die Concordanciae des Petrus de Sancto Floro*. Berlin, G. Reimer, 1894, pp. 201-204.
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