LF Rodella MD MSc

L'anatomia di Leonardo

Artista

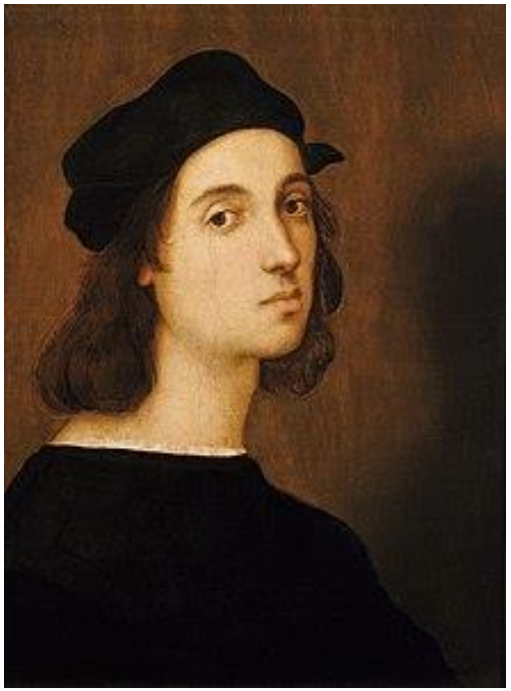
Ingegnere

Scienziato

Nutrizionista

Anatomico ?

Anatomia: base per gli artisti del Rinascimento



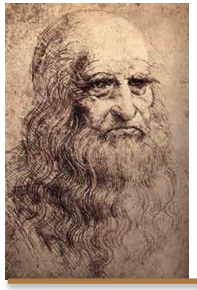
Michelangelo Buonarroti 1475-1564

Raffaello Sanzio 1483-1520

Quale è la peculiarità di Leonardo?

I suoi disegni sono solo “artistici”?

ANATOMIA e MEDICINA



E' sempre stato così?

Quale è stato il contributo di Leonardo?

Dissezione del cadavere

Dissezione principalmente di animali

Dissezione del cadavere

Leonardo 1452-1519

Aristotele

Erofilo
Erasitrato

Papiro Egizio

Mondino de Liuzzi

Berengario da Carpi

Fallopio
Fabrizio
Eustachio
Stenone
Wirsung
Malpighi (Anat Pat)
Morgagni
Valsalva
Scarpa

Medicina Galenica

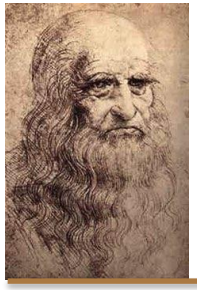
IPPOCRATE

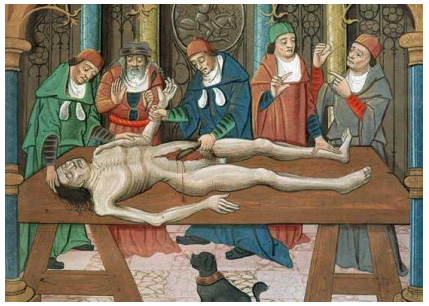
GALENO

VESALIO

1600 400 300 **0** 100-200 1000 1316 **1543** XVII sec Microscopio

AC DC





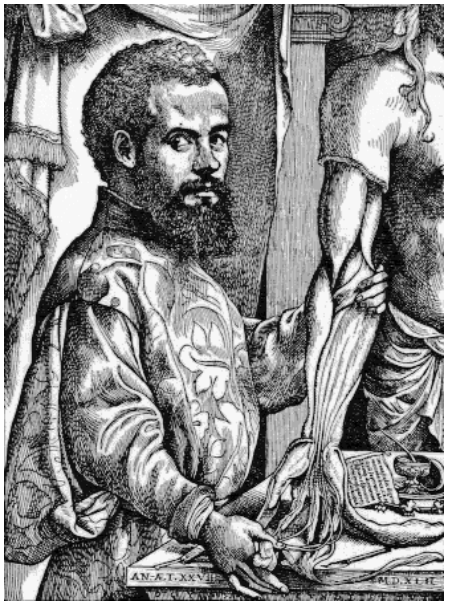
La rivoluzione anatomica

Andrea Vesalio

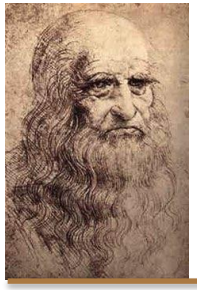
De humani corporis fabrica, 1543

7parti (libri):

- ossa e articolazioni
- muscoli
- sistema vascolare
- sistema nervoso
- addome
- torace
- cervello



1514-1564

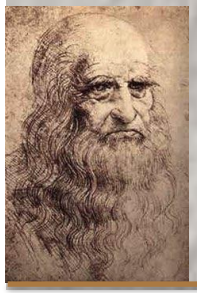


750 disegni anatomici

Nome	Dimensioni		Fogli		Parti	Data		Conservazione
	Alt.	Larg.	Origine	Attuali		Tra il	E il	
Codice Atlantico	65	44	401	1119		1478	1519	Biblioteca Ambrosiana (Milano)
Royal Collection				234		1478	1518	Castello di Windsor (Berkshire)
Codice Arundel 263	21	15		283		1478	1519	British Library (Londra)
Manoscritto A di Francia	22	15	114	97	1	1490	1492	Institut de France (Parigi)
Manoscritto B di Francia	23	16	100	95	1	1487	1489	Institut de France (Parigi)
Manoscritto C di Francia	31,5	22	32	32	1	1490	1491	Institut de France (Parigi)
Manoscritto D di Francia	22,5	16	10	10	1	1508	1509	Institut de France (Parigi)
Manoscritto E di Francia	14,5	10	96	80	1	1513	1514	Institut de France (Parigi)
Manoscritto F di Francia	14,5	10,5	96	96	1	1508	1509	Institut de France (Parigi)
Manoscritto G di Francia	14	10	96	93	1	1510	1516	Institut de France (Parigi)
Manoscritto H di Francia	10,5	8	142	142	3	1493	1494	Institut de France (Parigi)
Manoscritto I di Francia	10	7,5	144	139	2	1497	1499	Institut de France (Parigi)
Manoscritto K di Francia	9,6	6,5	128	128	3	1503	1507	Institut de France (Parigi)
Manoscritto L di Francia	10	7	96	94	1	1497	1504	Institut de France (Parigi)
Manoscritto M di Francia	10	7	96	96	1	1495	1500	Institut de France (Parigi)
Codice Forster I	14,5	10		54	2	1487	1505	Victoria and Albert Museum (Londra)
Codice Forster II	9,5	7		158	2	1495	1497	Victoria and Albert Museum (Londra)
Codice Forster III	9	6	94	94	1	1493	1505	Victoria and Albert Museum (Londra)
Codice sul volo degli uccelli	21	15	18	18	1	1506	1506	Biblioteca Reale (Torino)
Codice Trivulziano 2162	20,5	14	62	51	1	1487	1490	Castello Sforzesco (Milano)
Codice di Madrid I	21	15	192	184	1	1490	1508	Biblioteca nazionale di Spagna (Madrid)
Codice di Madrid II	21	15	157	157	2	1491	1505	Biblioteca nazionale di Spagna (Madrid)
Codice Leicester	29	22	36	36	1	1506	1510	Bill Gates (collezione privata)

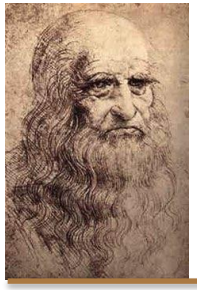
Anatomico o disegnatore anatomico?

Per la medicina o per l'arte?



Leonardo da Vinci

Giorgio Vasari 1511-1574

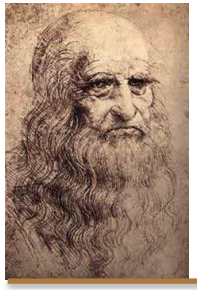


…mai non fu persona che fece tanto onore alla pittura.

Attese poi con maggior cura alla notomia degli uomini aiutato e scambievolmente aiutando in questo ***Messer Marcantonio della Torre****, eccellente filosofo che allora leggeva in Pavia e scriveva di questa materia fu dei primi che cominciò ad illustrare con la dottrina di Galeno le cose di medicina e a dar veramente luce alla notoria fino a qual tempo involta in molte e grandissime tenebre di ignoranza.*

La centralità del disegno anatomico

1481-1511



«la vera notizia della figura umana, la quale è impossibile che gli antichi e i moderni scrittori ne potessero mai dare vera notizia, sanza un'immensa e tediosa e confusa lunghezza di scrittura e di tempo; ma, per questo brevissimo modo di figurarla» - ossia rappresentandola direttamente con disegni, «se ne darà piena e vera notizia. E acciò che tal benefizio ch'io do agli uomini non vada perduto, io insegno il modo di ristamparlo con ordine.

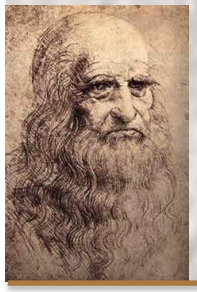
Marcantonio della Torre

La centralità del disegno anatomico

E tu che vogli con parole dimostrare la figura dell'omo con tutti gli aspetti della sua membrificazione, removi da te tale opinione perché quanto più minutamente descriverai, tanto più confonderai la mente dello lettore e lo removerai dalla cognizione della cosa descritta.

Leonardo da Vinci

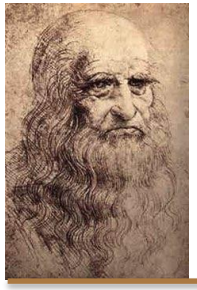
I“periodi anatomici” di Leonardo

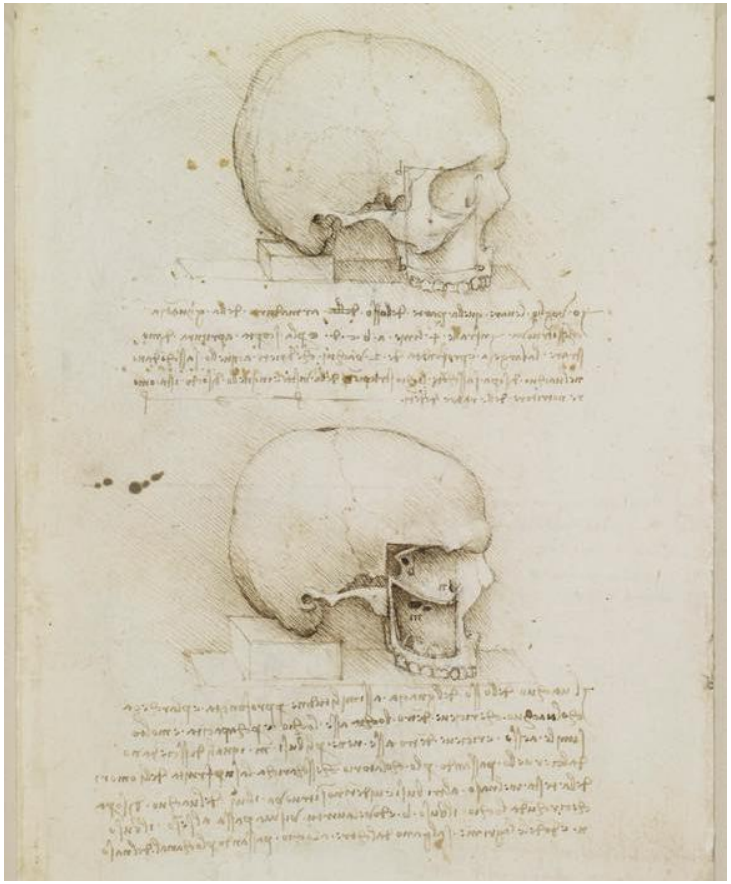


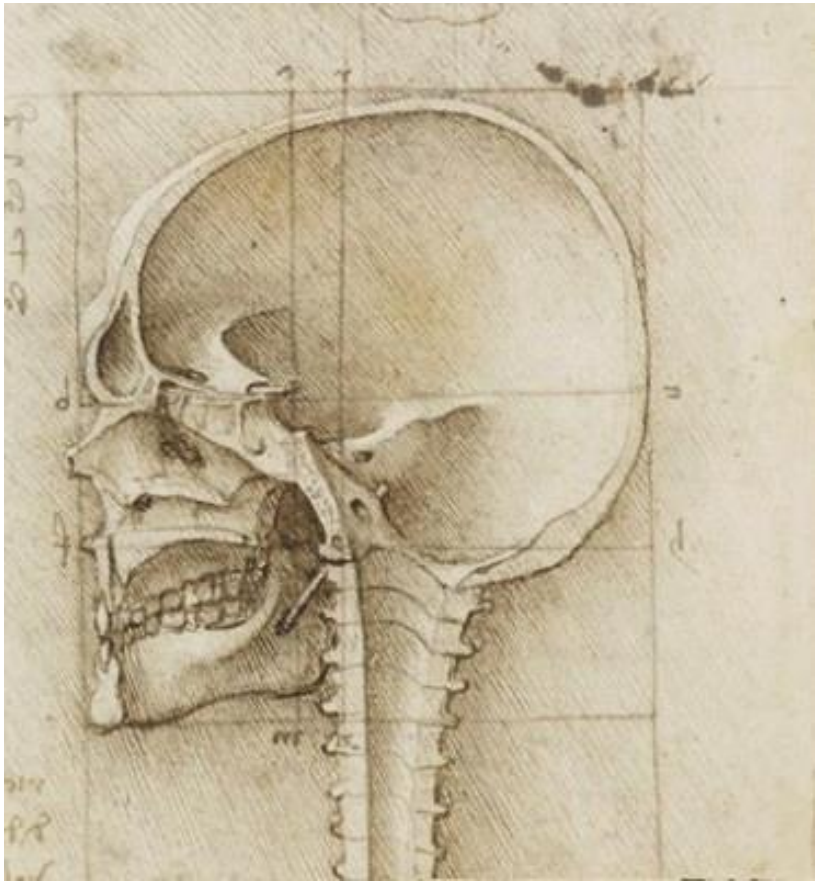
Primo periodo 1485-1495 -*Milanese*

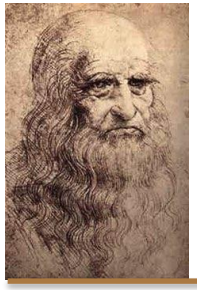
Ossa (prevalentemente crani)
(anatomia descrittiva)

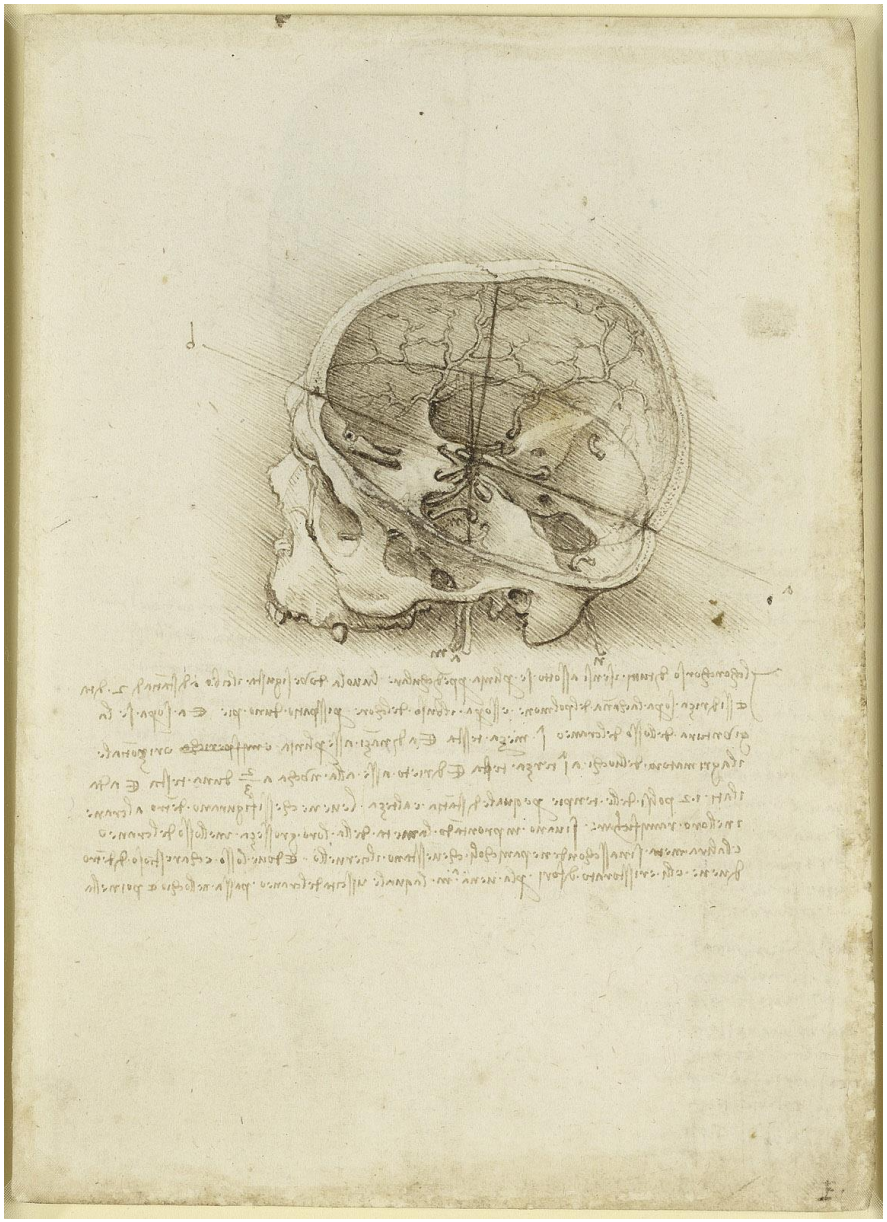
Studio delle proporzioni corporee

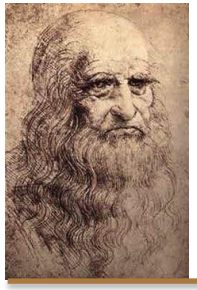










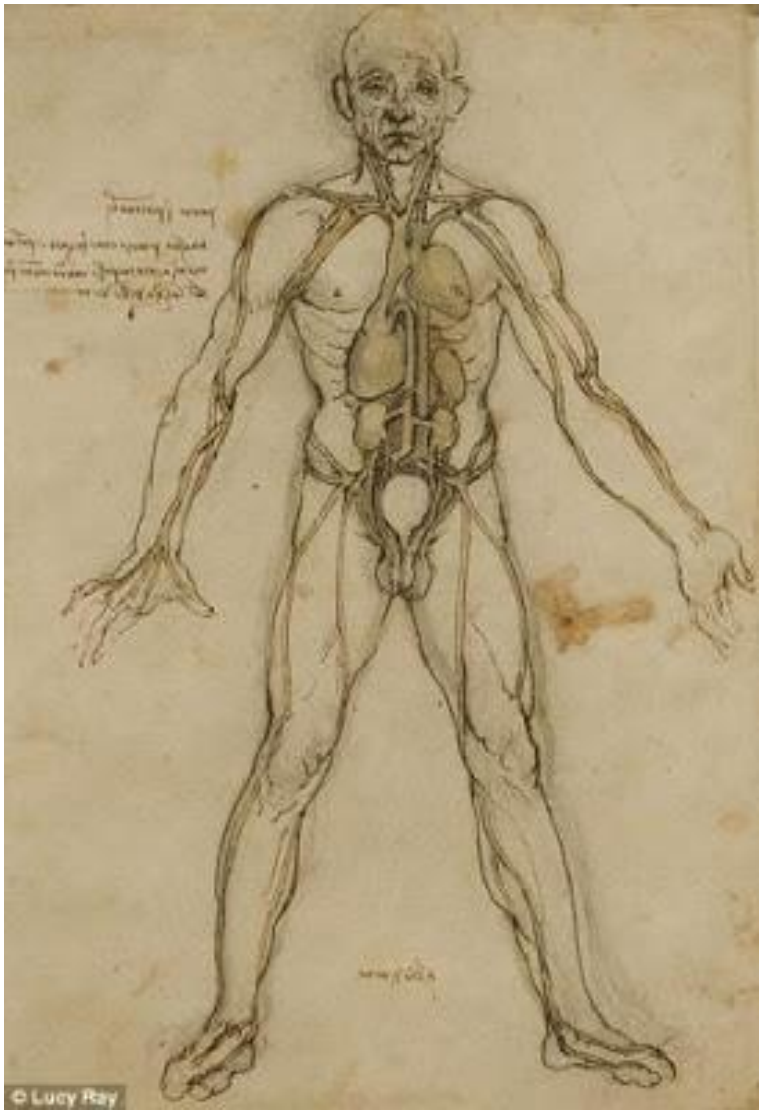


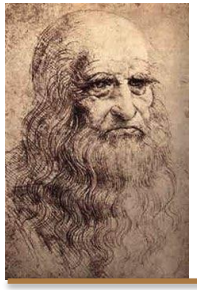
Secondo periodo 1506-1508- *Fiorentino*

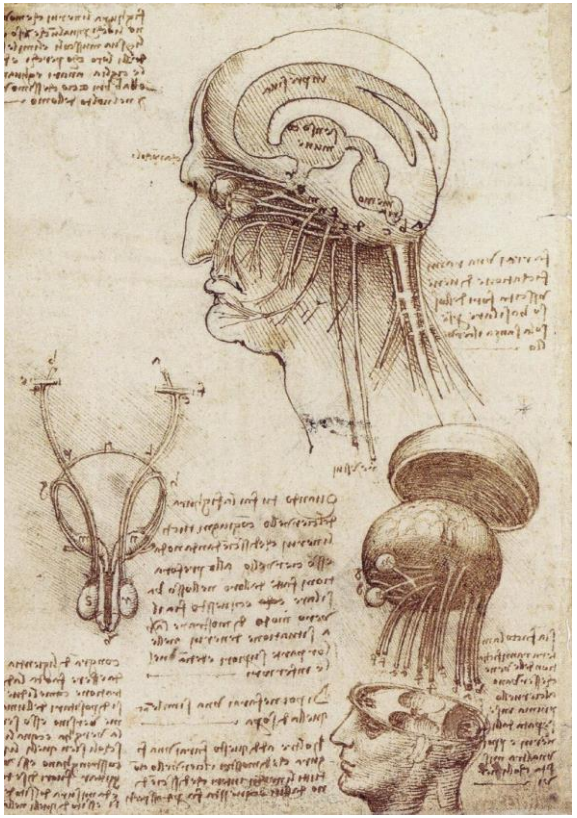
Dissezione dei cadaveri

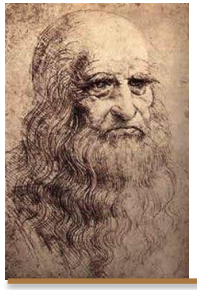
Encefalo

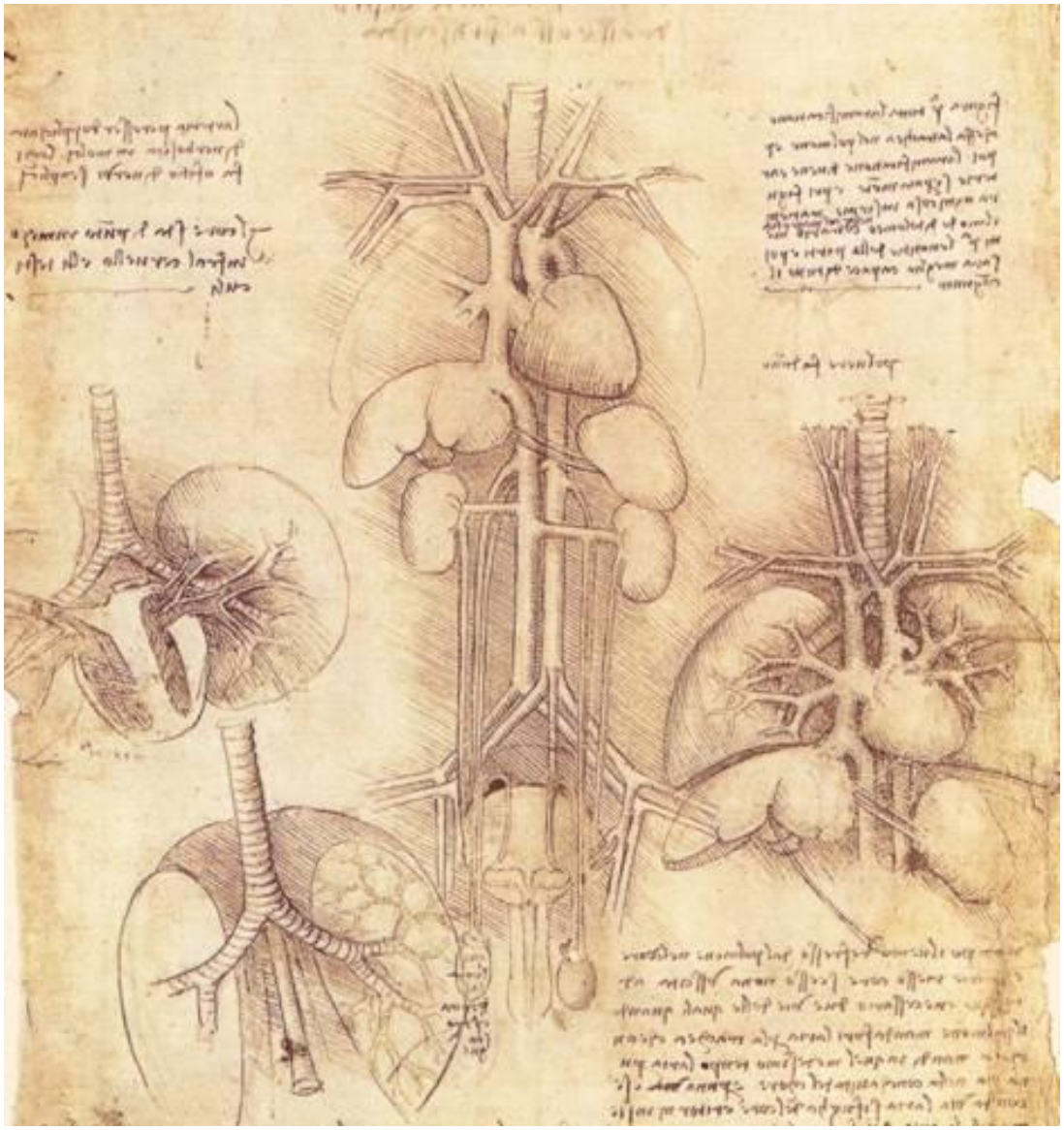
Curiosità anatomo-patologiche

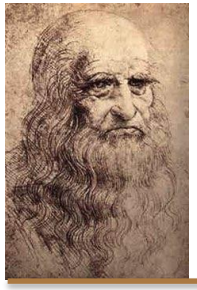


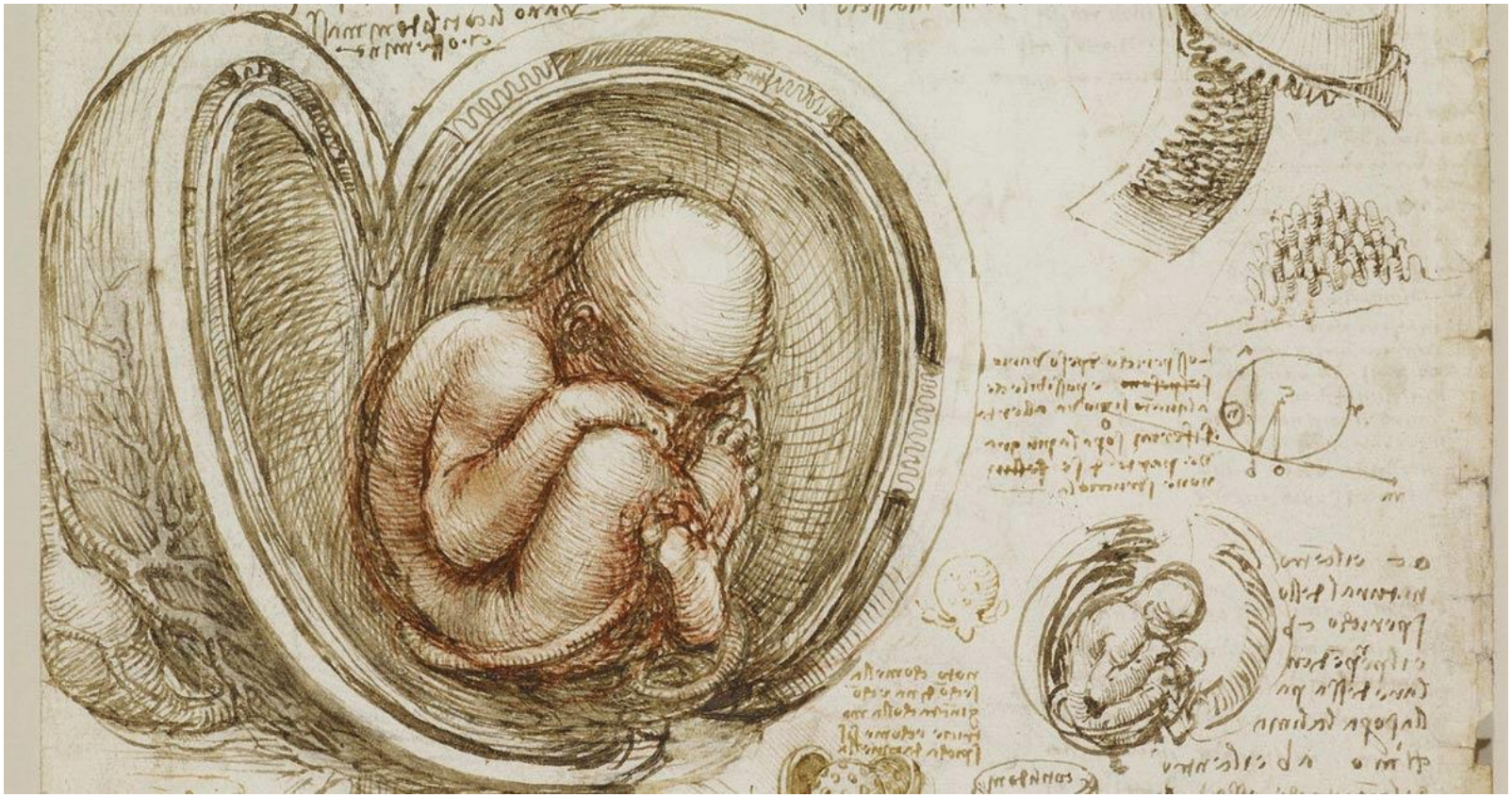


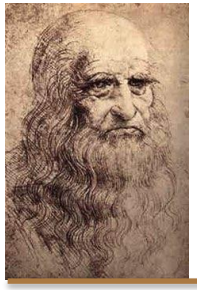






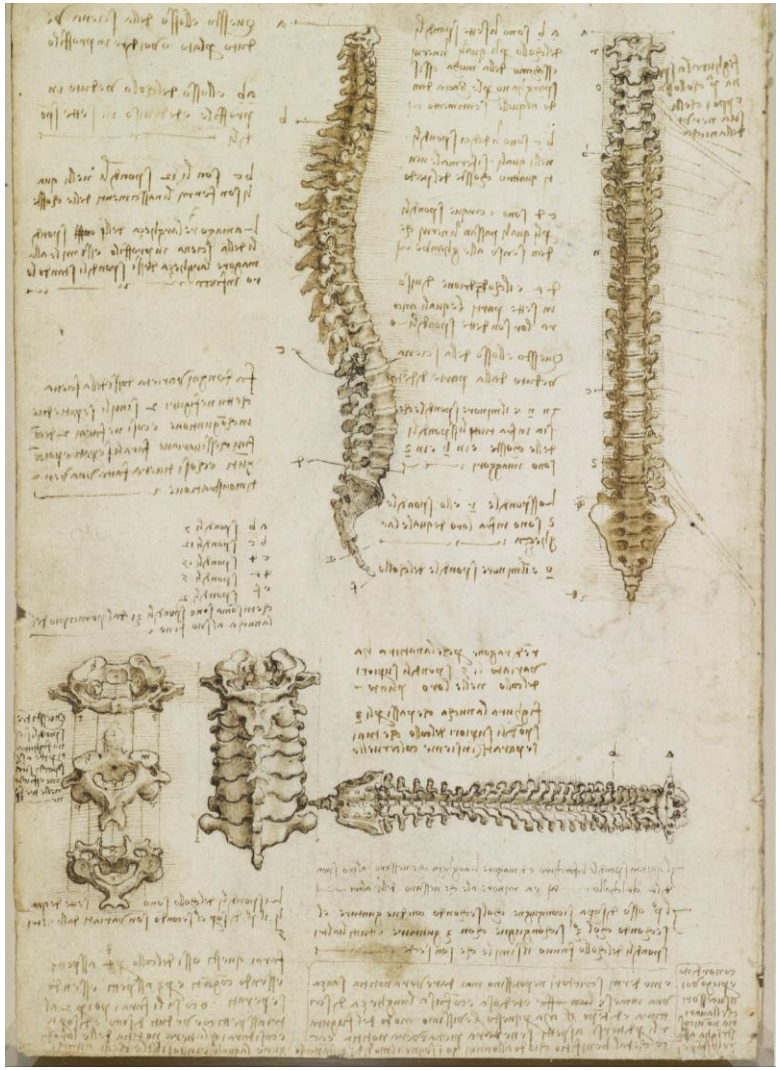


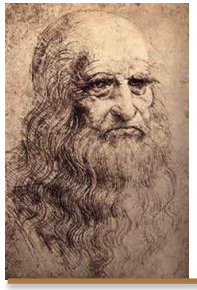


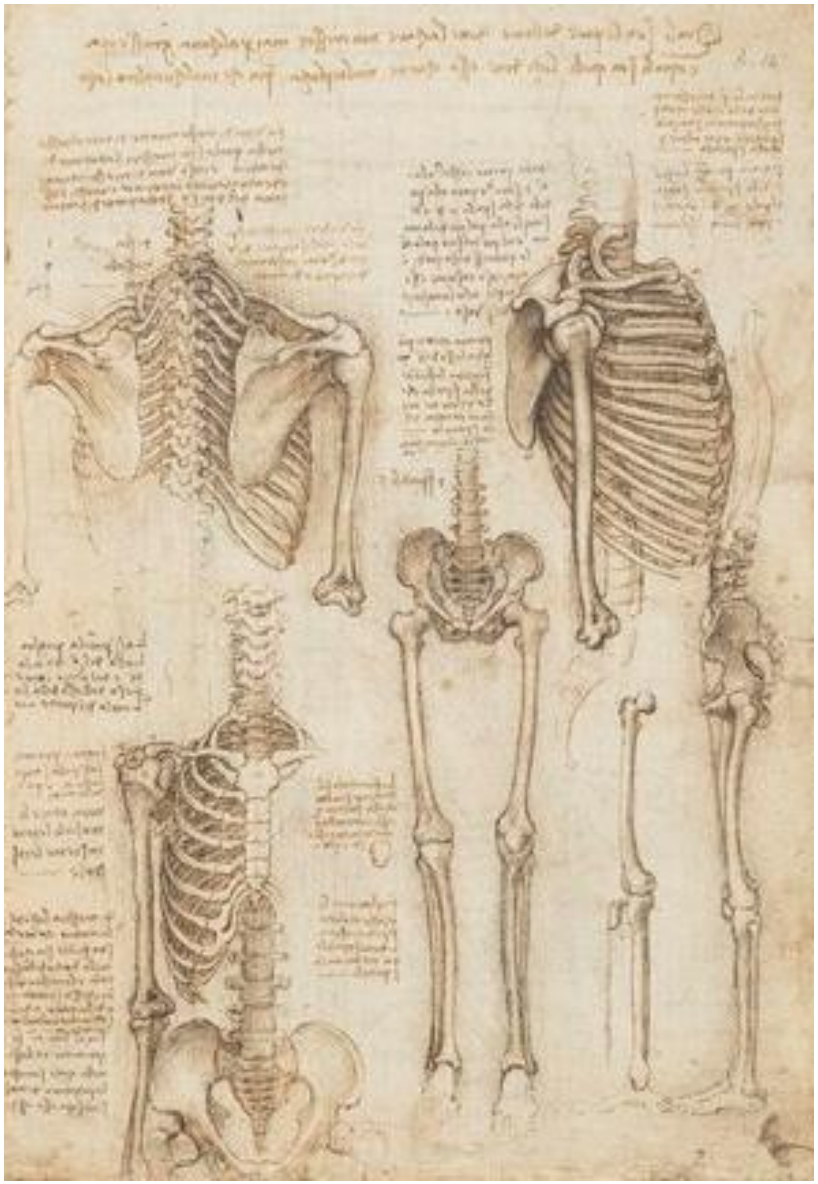


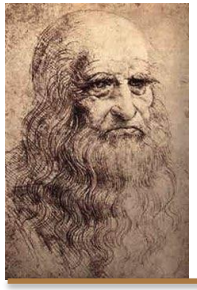
Terzo periodo 1510-1511 - *Pavese*

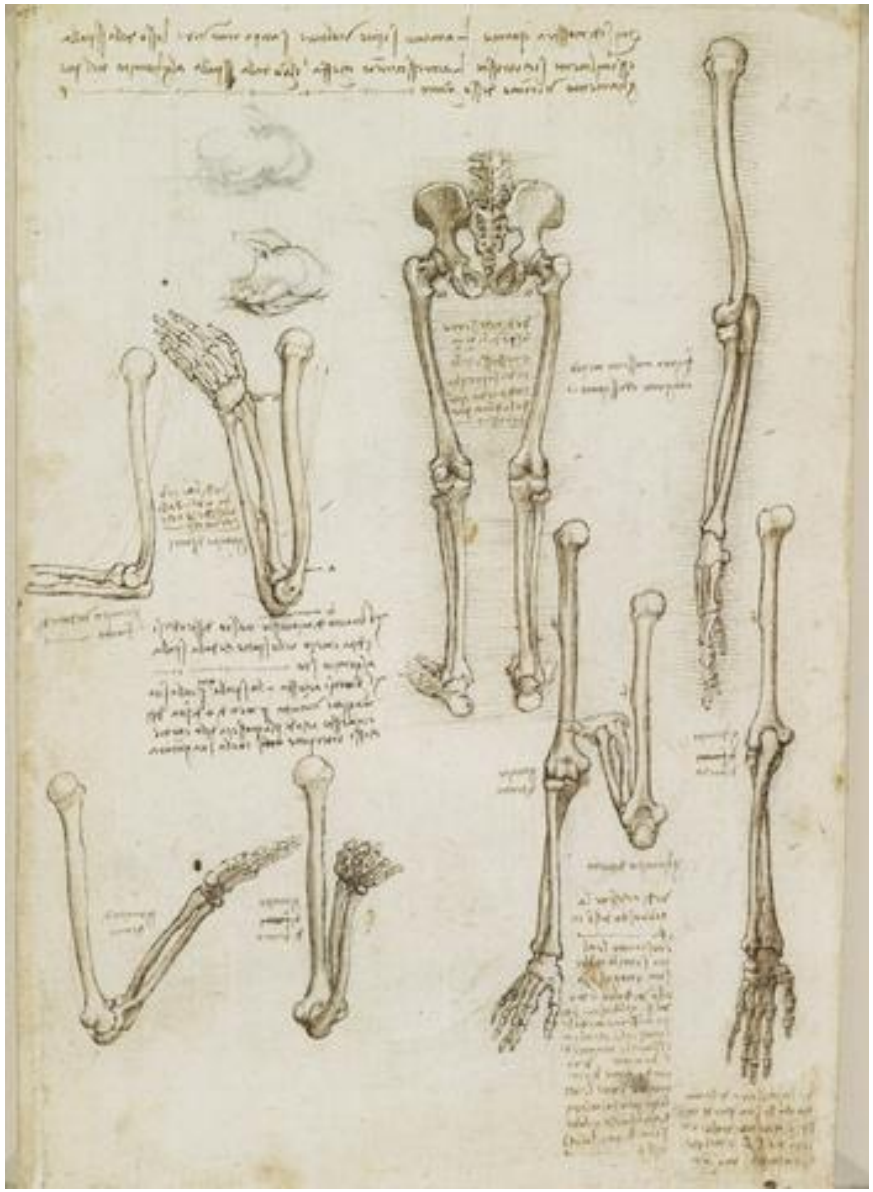
Ossa e muscoli - Biomeccanica

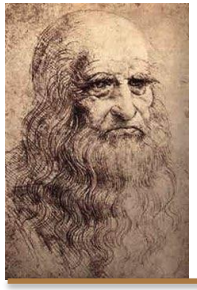


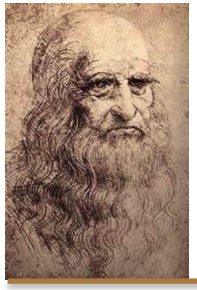






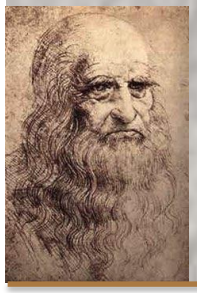






Vesalio è stato “contaminato” da Leonardo?

Quali le diversità tra i due?



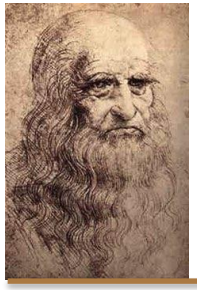
Vesalio utilizzava spesso disegnatori

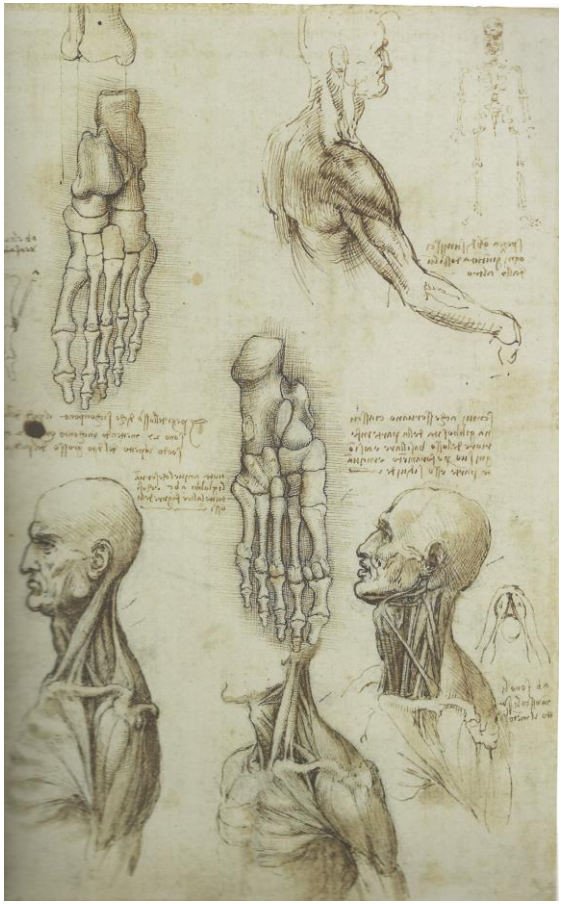
Atelier di Tiziano:

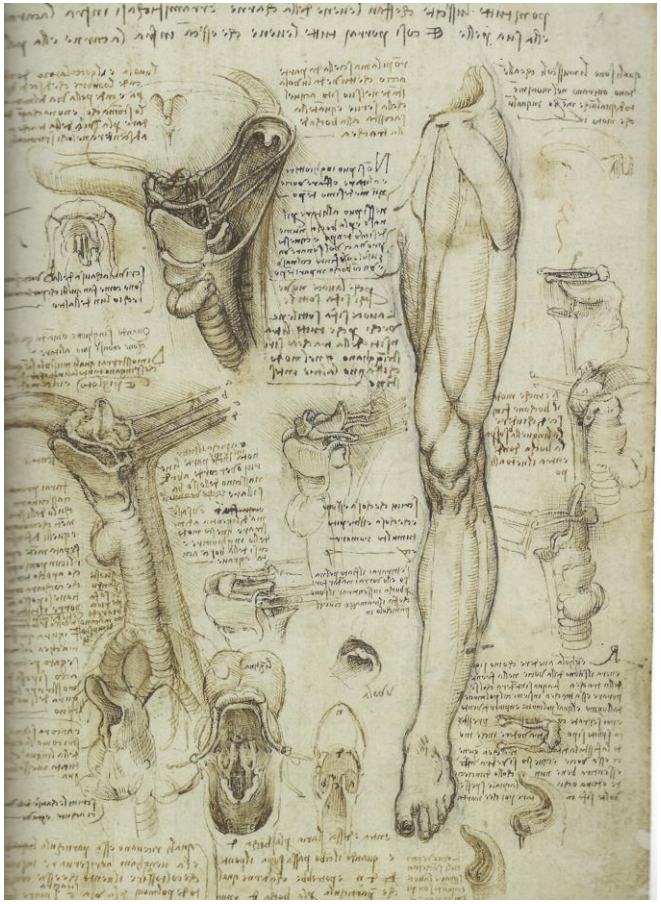
von Calcar

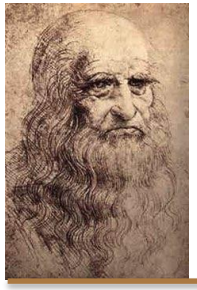
Domenico Campagnola

Leonardo disegnava









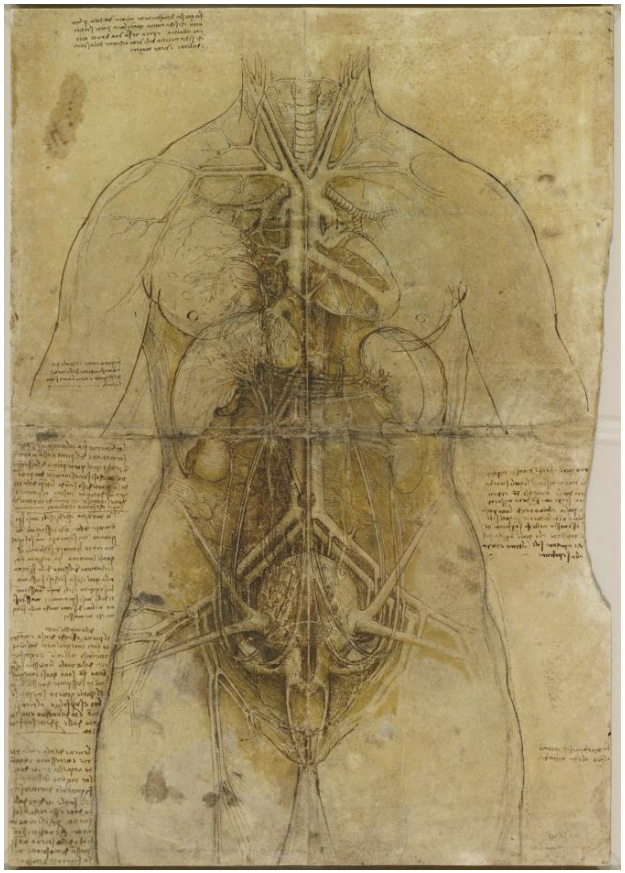
Molti fogli sono appunti che contengono parti anatomiche distanti

I diversi modi di rappresentare

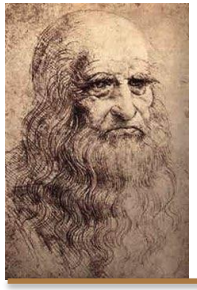
Rappresentazione dissettoria

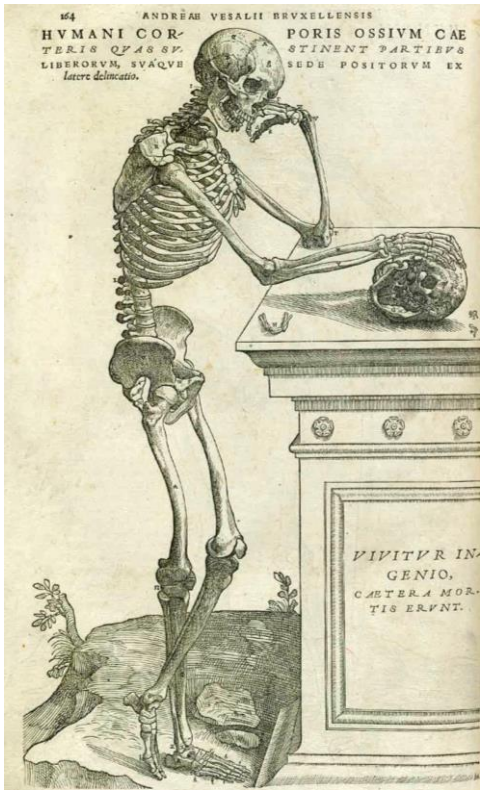
Andrea Vesalio

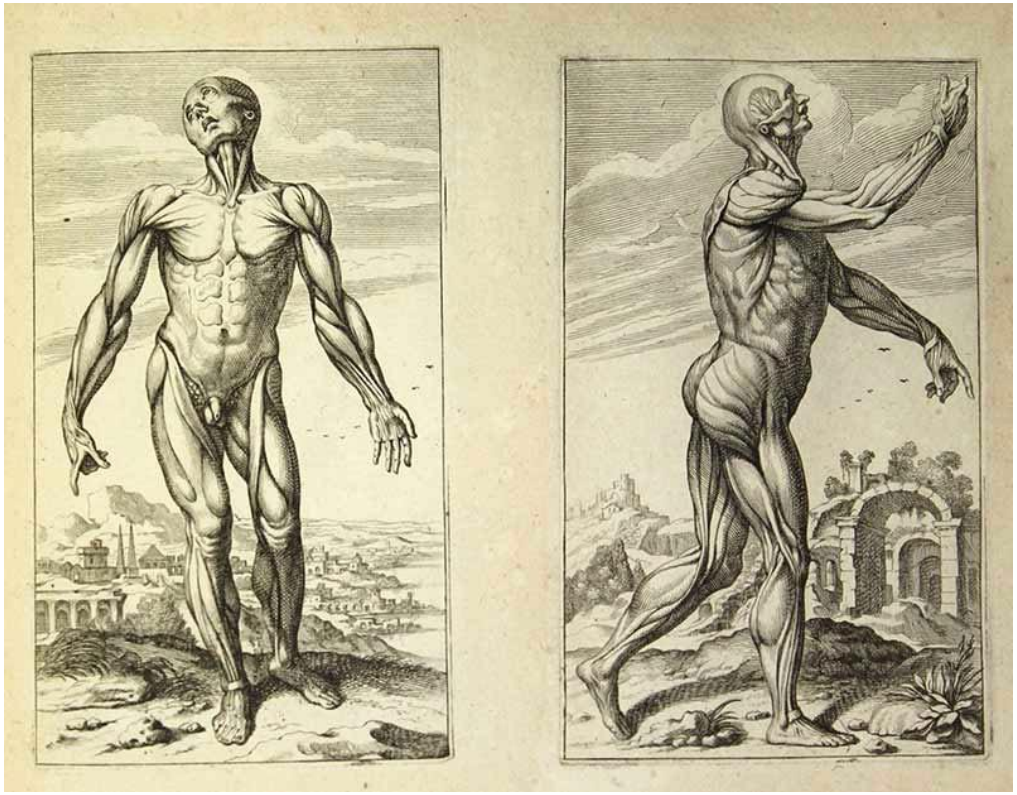
Rappresentazione compositiva

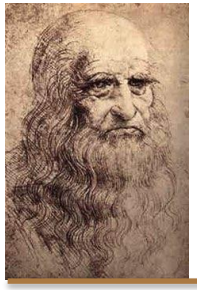


Leonardo

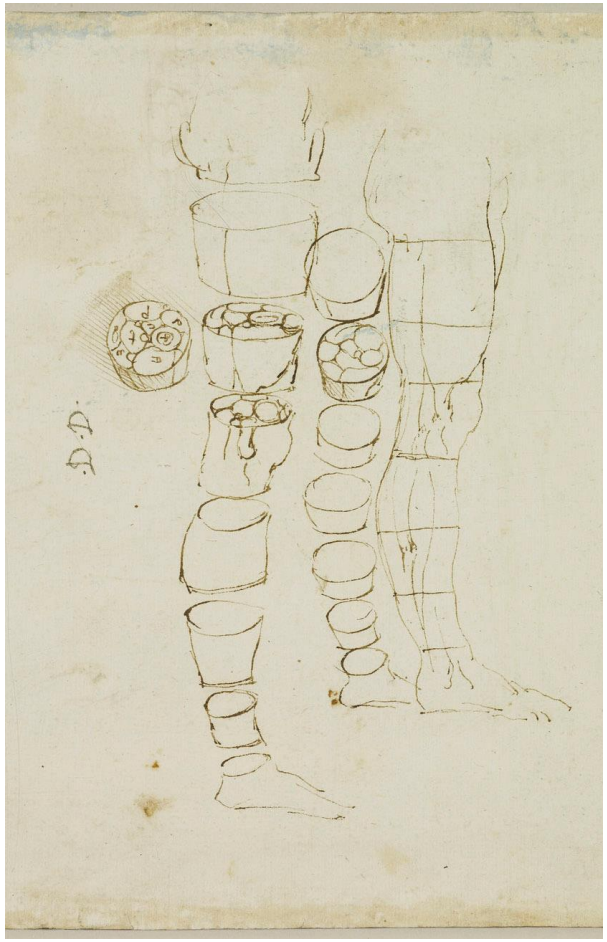


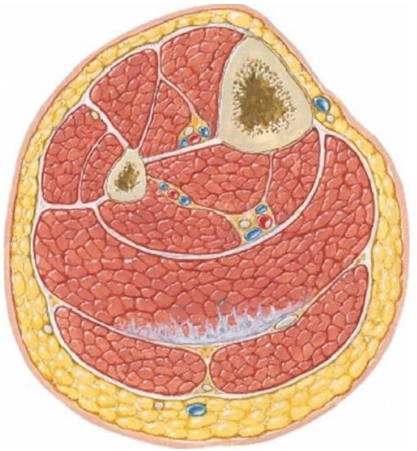


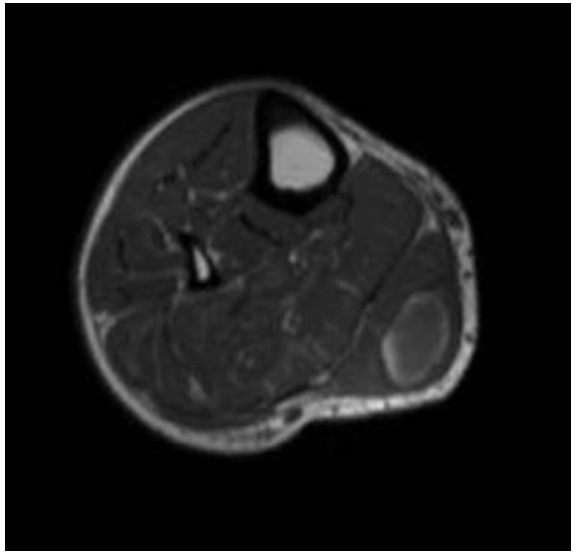


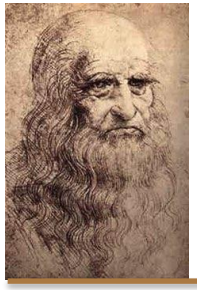


Andrea Vesalio



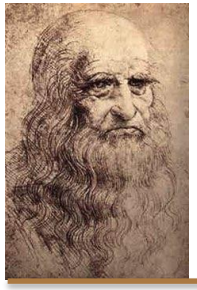


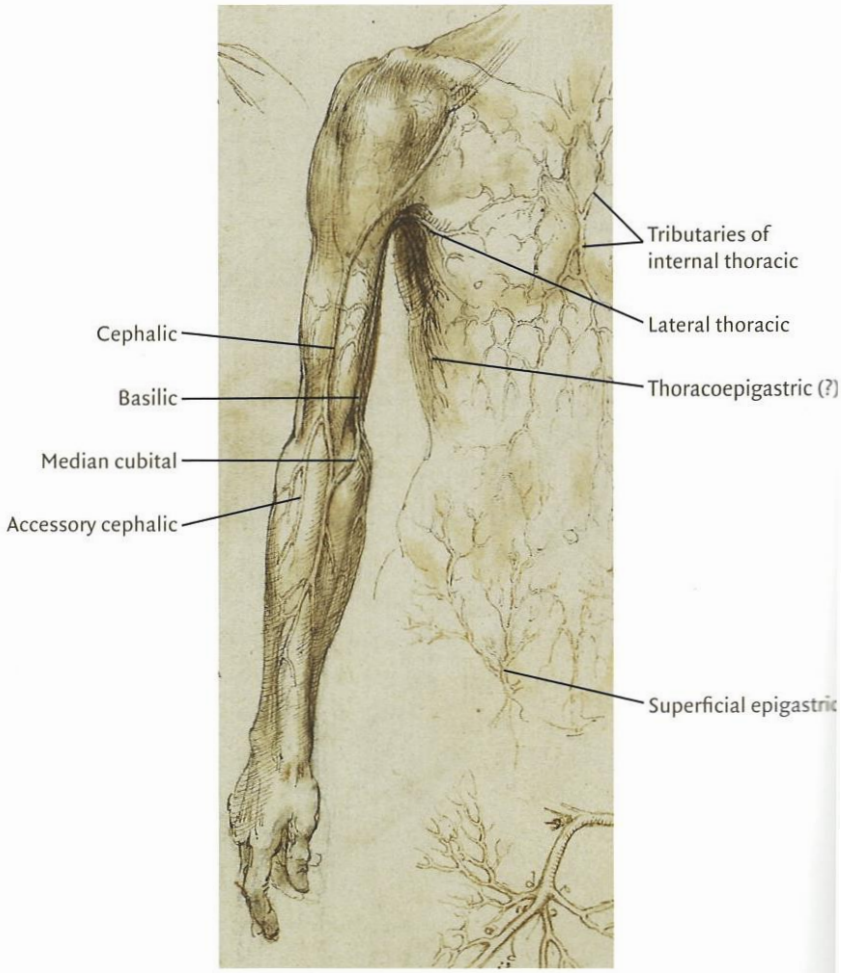


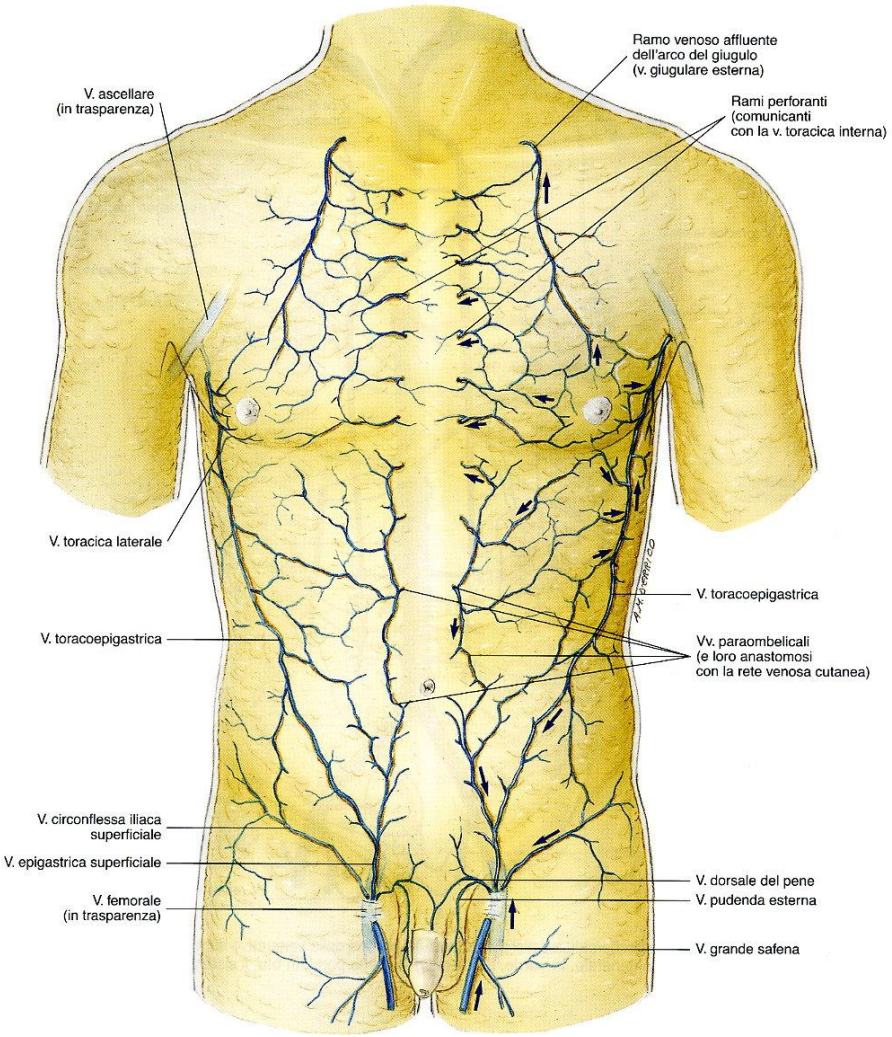


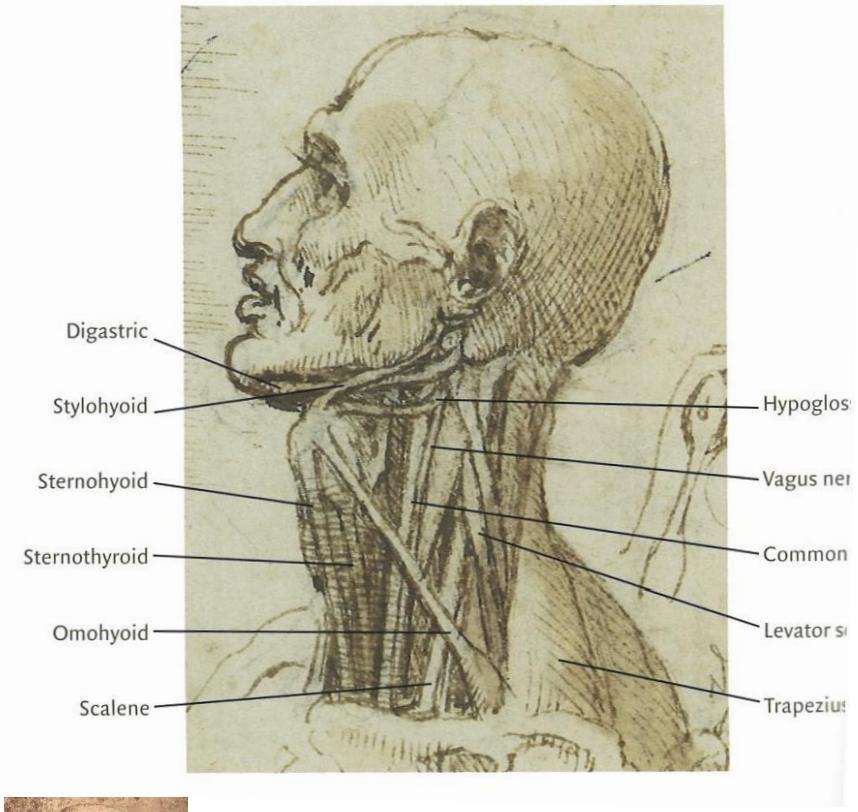
Leonardo

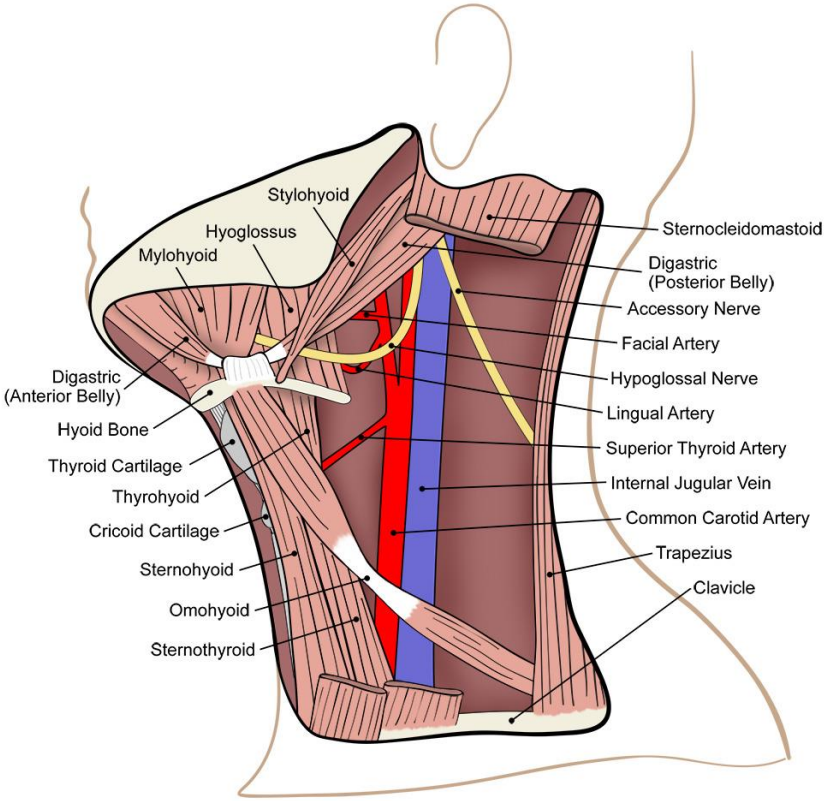
Si potrebbero utilizzare oggi i disegni di di Leonardo per fare lezione?

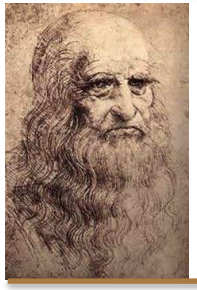


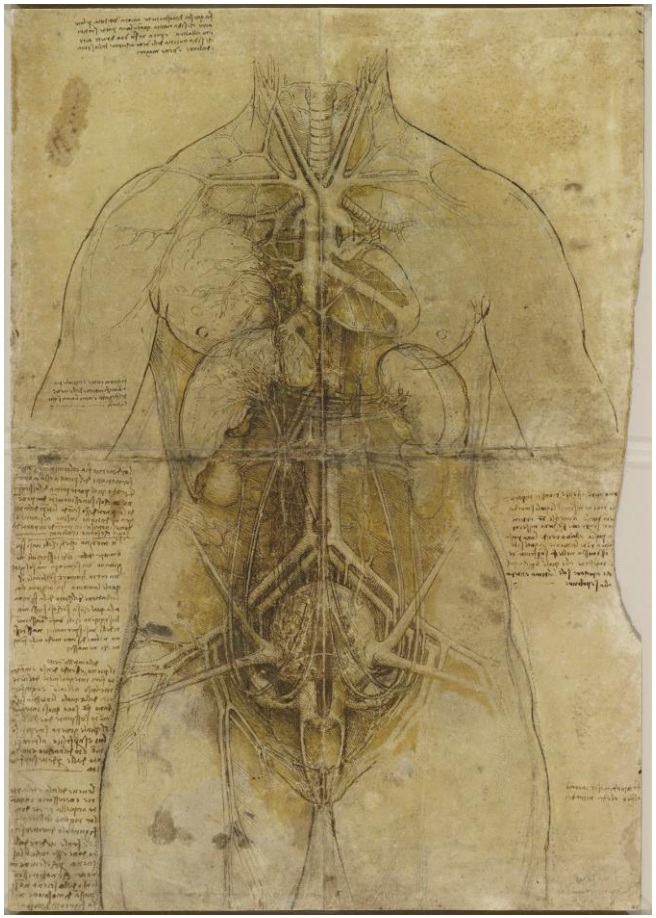

Tributaries of internal thoracic
Lateral thoracic
Thoracoepigastric (?)
Superficial epigastric
Cephalic
Basilic
Median cubital
Accessory cephalic

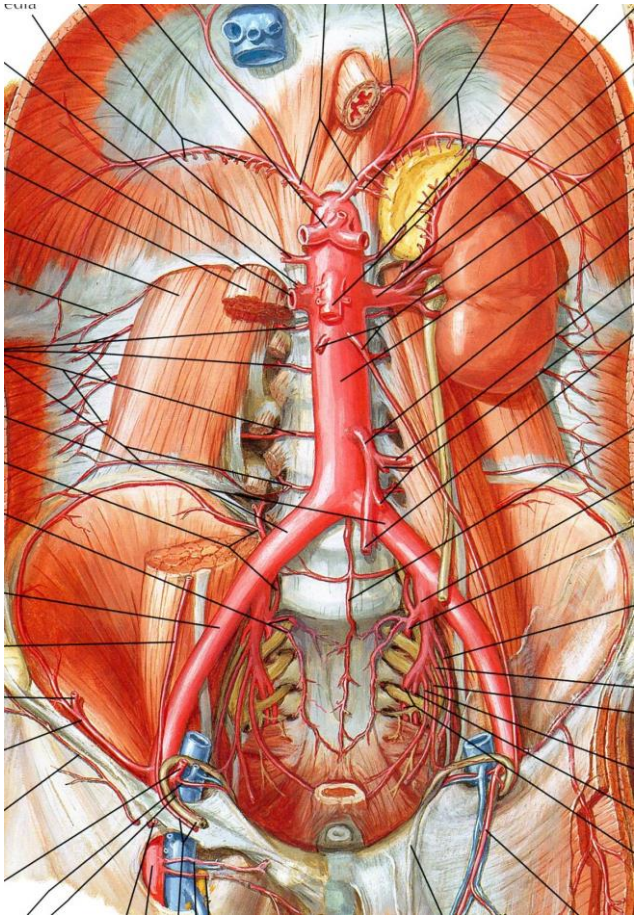

Ramo venoso affluente dell'arco del giugulo (v. giugulare esterna)
V. ascellare (in trasparenza)
Rami perforanti (comunicanti con la v. toracica interna)
V. toracica laterale
V. toracoepigastrica
V. toracoepigastrica
Vv. paraombelicali (e loro anastomosi con la rete venosa cutanea)
V. circonflessa iliaca superficiale
V. epigastrica superficiale
V. femorale (in trasparenza)
V. dorsale del pene
V. pudenda esterna
V. grande safena

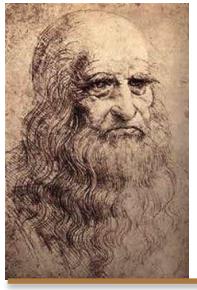

Digastric
Stylohyoid
Sternohyoid
Sternothyroid
Omohyoid
Scalene
Hypoglos
Vagus ner
Common
Levator s
Trapezius

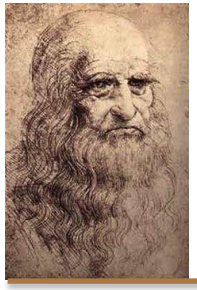

Stylohyoid
Hyoglossus
Mylohyoid
Digastric
(Anterior Belly)
Hyoid Bone
Thyroid Cartilage
Thyrohyoid
Cricoid Cartilage
Sternohyoid
Omohyoid
Sternothyroid
Sternocleidomastoid
Digastric
(Posterior Belly)
Accessory Nerve
Facial Artery
Hypoglossal Nerve
Lingual Artery
Superior Thyroid Artery
Internal Jugular Vein
Common Carotid Artery
Trapezius
Clavicle

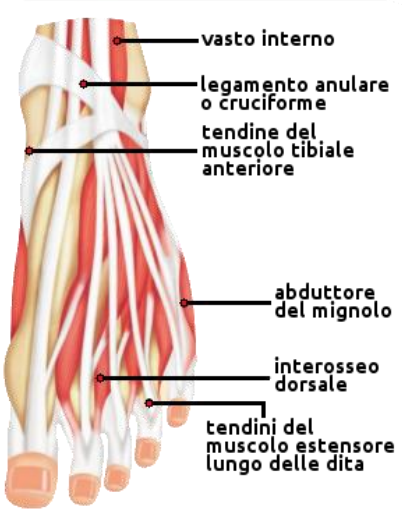


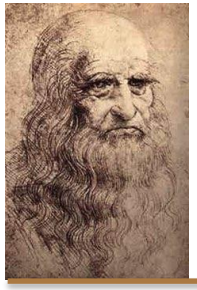


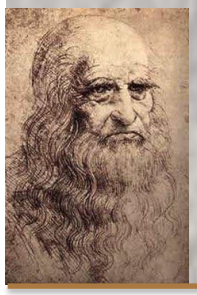







vasto interno
legamento anulare o cruciforme
tendine del muscolo tibiale anteriore
abduttore del mignolo
interosseo dorsale
tendini del muscolo estensore lungo delle dita



Leonardo può essere considerato anche un Anatomista?

Grazie