THE REFLECTOR

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Image by Jennifer Hu, MD, Class of 2018

Preface

The donors in the anatomy lab have gifted to you the most valuable thing that they had at the conclusion of their lives to allow you to learn from them. Acknowledgement of that gift can feel like a heavy burden. Yet, the permission to learn as much as you can through their dissection is an implicit message to you from this donor that reinforces the value of your education and the difference that you will make in the medical profession as a consequence of your training.

You will never know your donor in the way you may know the lab partners with whom you share this dissection experience. You will never be able to ask the questions of "who and what they loved in life, what they regretted, did they have a good life and a good death, or why they chose to gift their body?" Yet, you will come to know them in a memorable way. When you auscultate your patients' aortic and pulmonic valves and superior, middle, or inferior lobes of the lungs in the clinic, it will be your donor's heart and lungs that you visualize. Without ever knowing you, your donor had insight to entrust you to learn from them through this unique experience.

Virtual anatomy dissection apps simulate the systematic removal of tissue layers to visualize deeper structures. Photographic videos reveal anatomical structures evident at various stages of dissection. These tools facilitate recall of useful landmarks for identifying anatomical structures but won't cultivate the motor memory achieved by separation of fascial planes and reflection of structures to reveal what lies beneath. They won't teach you how to work as a team through a challenging dissection, such as the bisection of the head, to visualize the path of the trigeminal nerve. Seemingly superfluous to HSF, that process of navigating difficult dissections with a team lays a foundation for challenges encountered in future care of patients.

Through the years, senior students have shared that the anatomy lab was among the most stressful parts of their medical education. Additional queries unveiled two main contributors to that stress. The first was that team dysfunction hindered learning. I encourage you to get to know each other as a team outside of the anatomy laboratory. Share your passions and dislikes, strengths and weaknesses in learning, and individual goals for the anatomy lab. Then, work as a team to formulate a plan that allows each of you to be successful in that space in your own ways, but while functioning as a team and supporting each other in your collective learning.

The second stressor related to human dissection itself. As an instructor, I know that there are psychologically challenging dissections. The emotional valence to the hand, for example, makes the dissection of the palm more challenging than other regions. These dissections support the acquisition of anatomy knowledge expected of clinicians. Your reactions to challenges in the anatomy lab establish patterns of response to challenges encountered in clinical practice. Human Structure and Function and Health Humanities and Bioethics faculty have partnered to support your successful navigation of challenges and formulation of effective tools for evaluating how those experiences impact you. This Reflector, created by a former student, is intended to facilitate learning and personal growth during and after HSF.

You will be changed by this experience. For some, that change will be palpable and welcomed, for others, it will be with reluctance and angst. Embrace that each of you will process this experience differently; support each other in your differences. Periodically contemplate events in the anatomy lab that were transformational. I see those as opportunities for great personal and professional growth and I challenge you to use them as such.

Martha J. Gdowski, Ph.D. in Anatomy from The Pennsylvania State University College of Medicine, Anatomical Sciences Strand Director for Human Structure and Function at the University of Rochester School of Medicine, Course Director and Sole Instructor for Human Anatomy and Applied Human Anatomy.

July, 1997

Dear U of R Anatomy Students,

Have you ever wandered into an uninhabited old house and wondered what life was like when its first residents and those who followed them lived there? Have you ever tried to picture it brimming over with children playing, filled with smells from the kitchen and the sound of music from a piano in the front parlor? Or, have you ever sat in someone else's living room waiting for them to return from the kitchen with a cup of tea and tried to figure them out by the pictures on the wall, the knick-knacks on a bookshelf, or the crocheting sitting next to a favorite chair? If you have had these or similar experiences, then perhaps you can appreciate a little more what lies before you in anatomy.

As you enter the anatomy lab and work on a donor's body, imagine that you are wandering into a house that could easily have belonged to my Dad, who has died already and donated his body, or could one day belong to my Mom who has plans to donate hers.

People who know my Mom and Dad's house enter through the back door. You, too, will enter through the rear part of the person you are dissecting.....

- A back not unlike that which held me as a child while I wrapped my arms around my Dad's neck as he waded out into the water at our favorite vacation spot in the Adirondacks.
- A back bent with age and arthritis which could have caused pain and suffering to someone like my Mom who would like to be as active as she once was bringing communion to those in nursing homes or bending down to lift a crying child from the pavement.

As you eventually hold this person's brain in your hands it is as though you have been invited to see an upstairs room.....

- A brain as good as yours, perhaps, which could have brought this person to the U of R to study chemistry if it were not for the Depression in the 1930's and the need to get a job in the Civilian Conservation Corps to support the family.
- The brain of one who loves Lawrence Welk's music, hates Frank Sinatra's, enjoys singing in the church choir and whose greatest desire was to go to Toronto to see the stage musical Ragtime.

As you carefully enter to nooks and crannies of the hands, you will spend more time exploring these than it would take to explore my parents' whole house.....

- Hands which may have held the back of a bike until a little girl could ride on her own or which carried suitcases as that little girl grew up and went off to study, to work, or to see the world and experience new places.
- Hands which may have baked the best strawberry pie going, whipped up a roast beef and Yorkshire pudding for Sunday dinner, and then flew over the piano keys as they played Edelweiss Glide or Nola.

Each room is before you to explore with care the texture, the content, the color, the defects and the beauty. Enter each room with awe because it holds a cherished memory in the hearts of those who knew the first inhabitants....

Peace on your journey of discovery....
The Daughter of Anatomical Gift Donors

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Introduction

Purpose

Cadaver: Latin = one who has fallen.

The purpose of this book is to serve as a reminder that medicine is not only a science, but also an art of understanding how our own individuality interacts with the individuality of those around us. I see The Reflector as a humanities-based tool to help students learn anatomy, and to begin to establish the balance between emotional responses and objective responsibilities. In order to grow personally and professionally, students need time and space to think about our values, beliefs, and experiences; and recognize that these elements will mold us into the physicians that we will become.

About *The Reflector* - A Guide for Students

The Reflector is a parallel of the dissector. Each lab has its own corresponding section in The Reflector. Using this book as a guide, allow yourself to wonder, and to be curious. The donors that we encounter are so much more than just a heap of anatomical terms. They were living people. They are human.

When writing this book, I imagined that it would be something to use after each lab. However, you are free to use this book in any way that works best for you. I also strayed away from labeling labs as more difficult than others. You will hear common stories of how dissecting the hand is a difficult day, or how holding the heart or the brain can be challenging. However, I personally did not struggle with some of these "hard" labs; I found them fascinating, and then felt guilty for not having the "correct" emotions. I struggled the day that we removed the colon; I lost a family member to colon cancer and I could not stop wondering what his colon must have looked like inside of his body. I felt silly for moving so slowly on such an "easy" lab day. For that reason, I say that no lab is harder or easier than others, and I tried to treat them as such in writing the reflection questions in The Reflector.

Ultimately this book is for you – you are free to use it however you like. This book is meant to support a wide range of learning, from anatomical, to professional, to personal. It is my hope that students with different academic backgrounds, and with different learning styles can use this manual as an aid throughout the duration of anatomy lab. You also may want to revisit this manual when you return to anatomy lab for additional coursework, such as the NAN601 elective as a third or fourth year medical student.

This manual is only a foundation for the many thoughts, questions, and emotions that you will encounter in the anatomy lab and throughout medical school. Never hesitate to talk with **one another**. I challenge you to broaden your perspectives, and to learn from each other's experiences, strategies, and beliefs. Additionally, there are faculty members in HSF and within the medical school who are here to help you. At any time**, any professor in HSF** will be available to talk with you. Members of the Department of Health Humanities & Bioethics, **Dr. Patricia Luck, Dr. Jessica Shand, and Professor Susan Daiss**, will be in the labs periodically and are always available to meet outside of lab. Finally, never be afraid to say the wrong answer, to pronounce a structure completely wrong, and to ask for help when you need it.

-Jen Battaglia, MD, MS

Letter From the Editors

Dear Reader,

The Reflector, created by former University of Rochester student Dr. Jennifer Battaglia, is a tool you may choose to carry with you throughout HSF anatomy lab and beyond. Now, its existence continues as a growing and shifting document revised by current medical students. We, the Editors, maintain it such that it evolves each year to best support your needs as the incoming class. Please consider us a resource and advocate for your learning and wellness. If there are ways this book could better support you as you explore it, we welcome you to share those thoughts with us at any time.

We recognize, as others have written, that the anatomy lab is a challenging space to occupy as you step into the world of medicine. It is a strange privilege to begin to understand the functions of the living by meticulously examining the bodies of the dead. For many of you, this will be viscerally unfamiliar in ways that you cannot quite put into words. We hope that *The Reflector* not only helps you elicit those feelings and find language for your experience, but that it creates space for you to exist complexly within its pages. Consider this book an opportunity to document your thoughts, questions, and emotions as they arise in these initial months; you may look back on them in three years with gentle curiosity as to what your younger self was carrying at the very beginning of it all.

We hope also that this book offers you the chance to build connections with yourself and those around you, that it helps you see one another through different eyes. Importantly, we hope it reminds you to take good care of both yourself and one another. The learning of a medical student can feel invigorating and overwhelming. The only way we have found to get through this is by existing in close community with those around us. Lean on each other and take the time to pick others up where they've stumbled. It's a long, strange road ahead and the journey is best made in supportive company.

Sincerely,

Sarbjit Birdi, Talia Chen, Sabrina Sayegh, and Tiff Ting
The Reflector Editors

The Humanity of Anatomy

Using the humanities can help students understand anatomy. This book uses humanities disciplines such as language, art, and history to help students make connections to the lab material, and to acknowledge different perspectives. Understanding the root of a word will help you remember where a structure is, and why a structure was given that specific name. Using the space to draw structures will help you to check your understanding of the material. Using this book, I encourage you to not simply memorize, but to understand anatomy. Use this book to study, to reflect on your own and with your lab team, and to grow both personally and professionally.

Here at the University of Rochester School of Medicine and Dentistry, the Department of Health Humanities & Bioethics teaches 5 core disciplines in the medical school curriculum: narrative medicine, history, bioethics, visual arts, and biology & beliefs. Each of these disciplines are taught by unique faculty, and provide students with an expansive set of skills that can be used in clinical scenarios, as well as in personal and professional circumstances. The following pages provide more detail on each discipline written by the members of the Department of Health Humanities & Bioethics with respective expertise.

The members of the Department of Health Humanities & Bioethics are here to support you throughout your time in anatomy lab and beyond. Their email addresses are listed at the bottom of each following section and I hope that you reach out to these faculty members if you are interested in their respective disciplines, if you'd like to collaborate, or if you wish to broaden your perspectives during your time in medical school.

Narrative Medicine

We often think of storytelling as an exceptional activity—something we do around campfires when we have something unique or profound to say. But we also tell stories every day, in our attempts to communicate and understand the events comprising daily life. Anytime we represent or imagine a series of events occurring in time and space, and the agents affected by or causing these events, we tell a story. This basic narrative structure is common to all cultures, even if the meanings of the stories we tell vary widely across history and traditions. Story (or narrative) is a universal and basic structure of human cognition—a form by which we give shape to the profound and mundane stuff of experience. Despite its influence, you might still wonder how, if at all, narrative relates to modern healthcare. How do stories inform the scientific world of twenty-first century medicine?

Although medical practice requires significant scientific knowledge, most physicians spend their time engaging with patients. Of the many tasks required of medical professionals, a critical one is listening as patients tell. This telling might focus on a complex medical history, a series of events and symptoms, a description of a difficult life-situation. In these and many other examples, the patient tells a story, and the ideal doctor interprets that story—not merely as a courtesy, but to provide an accurate diagnosis, prognosis, and optimal method of care. Kathryn Montgomery Hunter, one of narrative medicine's originators and a former URMC faculty member, recognized that physicians also told stories. A scholar of English literature, Hunter identified narrative patterns in case reports, charts, and especially in the anecdotes that populate medical education. Recognizing narrative as a common form of medical knowledge, Hunter and others began to consider how the techniques and concepts of narrative analysis—the tools of literary scholars—might improve the physician's ability to interpret diverse medical stories. In addition to these clinical applications, narrative medicine prepares physicians to better understand the life experience of patients, their social and psychological dynamics, and the existential effects of illness. Personal narratives represent unique opportunities to understand the lives of others; by analyzing patients' written and recorded illness stories, students of narrative medicine better recognize the multifaceted dynamics of illness. By entering the narrative worlds of the ill, they enlarge their capacity for informed and empathic response to suffering.

If narrative grants us special access to the inner lives of others, it also allows us to explore ourselves and the experiences that shape us. Many great writers have also been physicians for a reason. By narrating their encounters with death and suffering doctors confront their most traumatic experiences while granting them meaning. Students often respond to the Anatomy Lab with strong emotions and ethical questions. As you begin working in the Anatomy Lab, I encourage you to narrate your experiences, whether joyful, traumatic, strange, or simply interesting. The Reflector contains many prompts for reflection—try responding to some of these by writing stories. The reflective practices you develop now, at the beginning of medical school, will help you to cope, thrive, and care intensely for your future patients.

Please do not hesitate to contact me if you would like to learn more about narrative medicine and the narrative medicine curriculum at URMC.

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History

Every current technology, every scientific theory, every diagnosis, every treatment in medicine has a history that has shaped contemporary medical education and clinical practice. Knowing something about the history of the profession, the theories of disease, diagnoses and treatments, and the experiences of physicians and patients in different time periods offer many lessons about knowledge and uncertainty, assumptions and biases, discovery and failure, creativity, decision- making and the impact relationship between patients and physicians.

The practices of medicine and the sciences do not happen in a vacuum; they are subject to the influences and effects of social, economic, political contexts. The History of Medicine strand teaches knowledge and skills in critical thinking and inquiry about scientific and medical theories, technologies and practices, and the ways that intellectual, social cultural factors have shaped modern healthcare. Every discussion will use historical famous and infamous medical cases, or journal articles along with responses by patients, or politicians or others in popular culture paired with current contemporary healthcare issue or medical case or med school course content.

The history of anatomy begins with Hippocrates, the "Father of Modern Medicine" in 430 BC. Dissection was part of his teaching; his students dissected bodies, but they were not done on humans. The Greeks had cultural beliefs and rituals to honour the physical body in death and preserve the integrity of the body for an afterlife. From the beginning of Western medicine, there is an irreconcilable conflict between learning from and on the bodies of the dead in medical training and the complexity social and cultural beliefs around death, afterlife, respect and interfering with the integrity of the whole body and personhood. This conflict has been studied by historians, and sociologists and educators, and continues to be uncomfortable, controversial medical education. Human dissections as part of the formal medical school curriculum begins in the 15th century, and your experiences in the Anatomy lab, personally and as a physician-in- training will connect you to 600 year old dissection practice.

The history of anatomical dissection has a rich and gnarly past; it was the first true medical "science" in its use of direct observation and description of human structures. Opening the human body changed medicine profoundly, in positive and negative ways.

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Bioethics

As a faculty member in the Department of Health Humanities & Bioethics, it is my responsibility to teach law and bioethics in the medical school. Bioethics is a relatively young inter-disciplinary field that applies ethical reasoning and methods to health sciences, including decision-making in the care of patients. Founders of this field include philosophers, theologians, and clinicians.

Becoming a doctor is a process, one that requires the development of intellectual and moral virtues. Successful admissions into medical school suggests that you have already invested in this process. Your faculty, including bioethics faculty, will help you form your identity as a competent, professionally responsible doctor. We will teach the knowledge and skills necessary to navigate moral complexities in medicine, including the role of ethics consultation services.

Foundational to intellectual and moral virtues is self-knowledge. You will want to understand why you see what you do. What you see will influence how you reason and how you act. "A lack in ability to perceive a particular feature, including a morally salient feature, of a situation hinders judgment and the decision-making process"[1]. The first step in ethical decision-making is "[k]nowing how to discern the particulars ... [This] is a mark of virtue"[2].

Anatomy lab will require you to engage in actions that under other circumstances would be socially and morally abhorrent. You and your lab partners may have different intellectual and moral reactions to this work. In addition to learning anatomical structures, you will potentially develop responses to conflict, stress, uncertainty, discomfort, disgust, awe, disagreement, team dynamics, and interruptions (just to name a few). These responses will be the foundation of your professional identity. Your work in lab includes cultivation of the intellectual and moral dispositions necessary to be a professionally responsible doctor.

The relationship between doctors and patients "is a very odd kind of relation between people"[3], one that simultaneously requires intimacy and distance[4]. You can begin to learn how to be simultaneously intimate and distant with your donor. You will know your donor's body in a way that the donor, and the donor's loved ones, could not. You will also dissect their body, in acts that require distance. Your donor can teach you so much about what it means to be a good doctor.

My role is anatomy lab similar to that of an ethics consultant, it is to help you think though morally complex issues. When you have questions, or would benefit from a conversation, you can call upon me. I look forward to working with each of you. Meliora.

Margie Shaw, JD, PhD
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[1]Shaw MH. Coaching as a Form of Instruction and a Component of Medical Ethics Education [dissertation]. Rochester, NY: University of Rochester (2011), 15–16.
[2]N. Sherman, The Fabric of Character: Aristotle's Theory of Virtue (Oxford: Clarendon Press, 2004), 3-4.
[3]Eric J. Cassell, Talking with Patients, vol. 1 (Cambridge, MIT Press 1985), 119.
[4]Richard M. Zaner, Troubled Voices: Stories of Ethics and Illness, (Cleveland, Ohio, The Pilgrim Press 1993), 9.

Visual Art

The practice of medicine and the visual arts have a long history from representing the inner landscape of the human body to chronicling the course of disease, from patients engaging with art over the course of their treatment, to the development of accurate and empathic skills of observation. At first, artists and anatomists independently studied the interior structure of the human body, artists to render the body realistically and anatomists to understand how it functions. From the Renaissance to the present day, artists and anatomists have collaborated to share their explorations and discoveries. Thanks to innovations in technology from moveable type to the printing press from photography to digital imaging, the once invisible inner landscape of the human body has been revealed. Beginning as medical students, physicians have been among the principle beneficiaries of this collaboration. Attending actual dissections accounted for part of their education, but as important then as now was reference to anatomical illustrations.

Learning to see as medical professionals at the UR's SMD begins with a combination of experiences: classroom lectures, Netter's textbook of anatomical illustrations, and hands-on experience in the anatomy lab. While attending anatomical dissections has been essential to learning to see as medical professionals, studying artists' representations of the interior of the human body has also played a vital role. Setting the school's contemporary use of Netter's Atlas of Human Anatomy into a historical context, the Visual Arts and History of Medicine Strands both include visits to the Edward G. Miner Library's world-class collection of anatomical atlases, dating from the 16th to the 19th centuries.

The Visual Art Strand's primary teaching resource is the Memorial Art Gallery with encyclopedic collections of world art that span over 5,000 years of human history. In addition, visits to the George Eastman Museum's historic photographic collection offer eye-witness testimonies to history—including representation of disease— from the beginning of the medium in the 1830s to date. Also included in the Visual Arts Strand are introductions to programs in the Rochester community that offer experiences that explore connections between art and personal and community wellness. Among the diverse programs available for student participation are the Memorial Art Gallery's Meet Me at MAG, a program designed for individuals with dementia and their care partners, and tours designed for individuals who are blind or partially sighted.

I am looking forward to meeting all of you this semester in the anatomy lab where I will be available for all manner of conversations except questions about anatomy. There you will increasingly be the experts, and I will remain the perennial student!

Please feel free to call on me in the lab, in my office at the medical center or the Memorial Art Gallery.

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Biology & Beliefs

The Biology and Beliefs is a new strand that is being developed from within the Health Humanities and Bioethics Department. This area combines knowledge from a broad field of the social sciences, contemplative research, and humanities disciplines, to examine the culture of medicine and healthcare within its wider societal, cultural, ecological, political and spiritual contexts. As an adult and paediatric palliative care physician, medical humanities academic, and certified mindfulness-based stress reduction teacher, who has worked and taught on four continents, I find myself uniquely situated at this interface of biology and beliefs that challenges all of us within healthcare to look deeply into how our values, attitudes, biases, and beliefs have been cultivated and developed within the diverse backdrop of social and cultural contexts that are encompassed within the biopsychosocial model. This especially requires of us to examine our own automaticity of response and reflect on how these may have developed.

This strand focuses in particular on the interface of beliefs that exist at the margins between the bio and the psychosocial. It is our desire that through exposure to this strand you will have opportunity to:

- Experience and understand how personal mental models, unconscious biases and assumptions, contextual backgrounds and culturally nuanced judgments, and interpretations, condition perception, values and attitudes.
- Be able to describe and experience how awareness of your own perceptions allows setting aside of preconceptions to be more attentive and present in the face of others and their suffering.
- Understand the power of and barriers to attentive observation and critical curiosity in clinical practice.

Using various interdisciplinary, experiential learning activities, and contemplative practices, students will develop self-reflective habits of mind, cognitive and affective awareness of values, beliefs, and lived experiences, and be able to translate and apply this knowledge to their developing clinical skill set.

My goal is for students to:

- Develop the capacity for open, attentive and responsive awareness that is grounded in the foundational attitudinal skills needed to recognize cognitive dispositions that impact complex clinical care.
- Develop capacity for emotional stability, awareness of suffering, and compassionate engagement when engaging with patients, their families, colleagues, and the clinicians themselves.
- Develop knowledge and awareness of the multiplicity of belief and faith structures, as well as how these may shape our daily interactions, and develop capacity to openly and generously engage around sensitive belief-based topics with patients, the health care community, and society at large.
- Develop enhanced awareness of, and capacities for, self-care and resilience; listening and observational skills.

As faculty in the Department of Health Humanities and Bioethics I am available to you anytime should you wish to discuss any of the above. Please come visit with us in the department office and I look forward to getting to know each one of you.

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Block I, Chapter 1

Back and Spinal Cord

I. Back

Learning Objectives

- Reflect on the experience of meeting your donor.
- Begin to create a productive and supportive group dynamic.
- Notice the feeling of standing at the table with your donor.
- Think about the experience of dissecting in this first lab.

14 weeks.
14 weeks to dissect an entire human body. To learn thousands of new terms, essentially a language. In 14 weeks, we pried off the posterior aspect of the vertebrae, and saw the beauty of the spinal cord. We dislocated the shoulder and separated the branches of the brachial plexus, tracing them down the arm. We sawed down the midline of the face, delicately revealing nerves, following them to ganglia. We used all our strength to bisect the pelvis, completing the course with body parts randomly strewn across the table. 14 weeks to push through, so we compartmentalize, but not too much.
This experience defines growth- academic, yes, but personal too. From the first day, timid and scared, to the days we thought there was too much to learn, too much to do. Ending confident and curious, wishing we could rewind to day one. Rewarding and humbling, mere words do not do it justice. But to William: you made the ultimate sacrifice for these 14 weeks. We promise your gift will transcend time and space. Thank you.

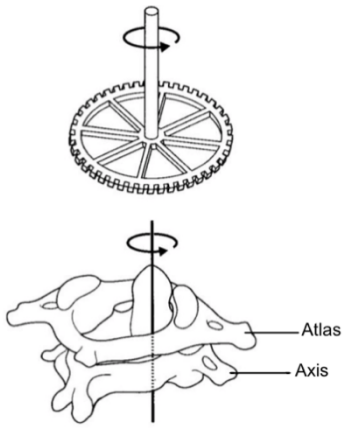
-Jessica Forman, Class of 2023

A. Vertebral Column

Check your Understanding: label the vertebrae and draw the 31 pairs of spinal nerves.

Atlas (C1): named for the Atlas of Greek mythology, who was condemned to hold up the sky for eternity. Likewise, the atlas supports the globe of the head.

Axis (C2): axle or pivot; the pivot around which the first cervical vertebra, the atlas, rotates.



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

B. Back Muscles

Trapezius: Greek trapezoid = a quadrilateral with two parallel sides.

Dorsi: Latin = towards or on the back.

II. Deeper Back Muscles and Spinal Cord

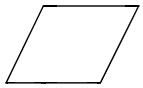
Learning Objectives

- Think about your role in your lab group.
- Reflect on the experience of examining the back and spinal cord.
- Draw a typical spinal nerve showing its efferent (motor) and afferent (sensory) components and how it originates from the spinal cord

Perhaps of all the remarkable surprises that I encountered during my first day as a student in the human anatomy lab, nothing was as striking as first seeing the smallness of the diameter of the spinal cord. Not much thicker than a pencil, this rope of nerve cells and fibers coursing up and down the midline of the back carries all the converging, 2-way traffic of information that tells the brain what the body is experiencing and conversely, allows the brain to command the body to respond. All those complex sensations and motor patterns carried by a delicate, white cord of tissue thinner than your little finger! Any trepidation I had moments earlier about the task before me had now given way to astonishment, humility, curiosity and gratitude. I was hooked!

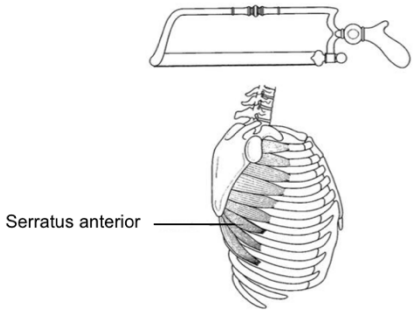
- Dr. David Kornak

Rhomboids: name is derived from the shape - similar to a rhombus.



A. Intermediate Muscles

Serratus: Latin = saw-toothed; describes muscles with fleshy digitations resembling the teeth of a saw; these muscles attach to multiple ribs.



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B. Deep Muscles

Splenius: Greek splenion = bandage.

Captitis: derived from Latin caput = head.

Cervicis: Latin = of the neck.

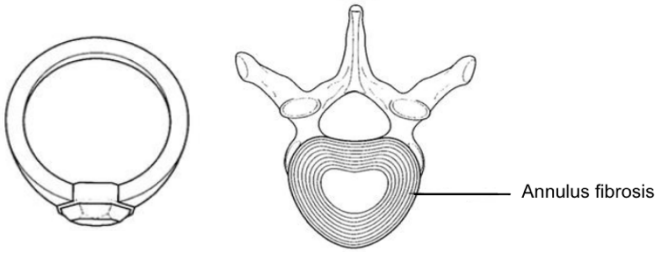
Spinalis: Latin = of or belonging to the spine.

Ligamentum nuchae: derived from French nuque = nape or back of the neck.

C. Vertebral Canal and Spinal Cord

Vertebrae

Annulus: diminutive of Latin anus = finger or signet ring.



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Ligaments

Supra: Latin prefix = superior to.

Intra: Latin prefix = within.

Ligamenta flava: Latin = yellow ligament.

Meningeal Layers

Mater: Latin = mother.

Dura mater: Latin = tough mother.

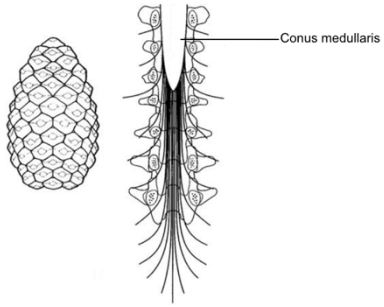
Arachnoid mater: derived from Greek arachne = spider; the suffix "-oid" = similar to.
Pia mater: Latin = tender mother.

Epidural: derived from the Greek prefix "epi-" = upon; hence, external to dura mater.

Denticulate: derived from Latin dens = tooth; hence, having small tooth-like projections.

Spinal Cord

Conus medullaris: Latin conus = a pinecone; medullaris = from Latin marrow (e.g. bone marrow) that was recognized to be the soft, central part of bone. When early anatomists looked at the vertebral column, the spinal cord (originally named the medulla spinalis) looked like bone marrow.



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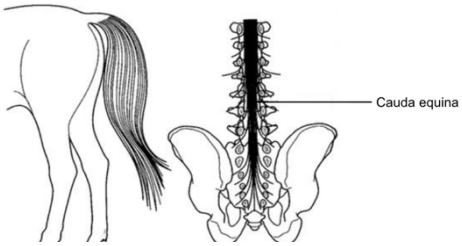
Filum terminale: derived from Latin filum = thread.

Cauda equina: Latin = the horse's tail; a bundle of nerve fibers extending from the end of the spinal cord.

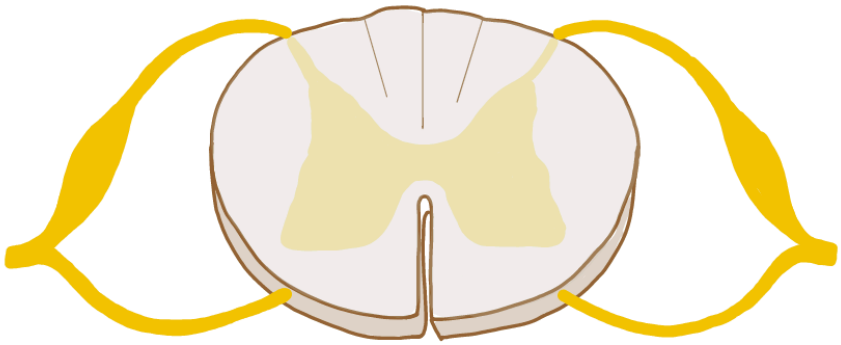


Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Spinal Nerve

Ramus: Latin = branch.

Check your Understanding: draw a typical spinal nerve showing its efferent (motor) and afferent (sensory) components and how it originates from the spinal cord.



Block I, Chapter 2

Upper Limb

I. Shoulder

Learning Objectives

- Reflect on the experience of starting to dissect the upper extremity.
- Notice how you have been referring to your donor.
- Recognize the interactions you have had with other donors at this point.
- Reflect on your lab group's dynamic.

A. Introduction

I have always relished the tending of gardens. I seriously contemplated a career in botany.

I am fascinated by the germination of seeds. Delicate and vulnerable, seedlings are continually impacted by variables that change the course of their development. Nurture and support yields robust and healthy plants, capable of achieving their full potential. With neglect, seedlings wither. Tending my gardens, some seedlings mature, yielding bright and colorful flowers. Others mature into herbs that enchant summer meals. Some bear delicious fruits and vegetables. Often, I pause with wonder to examine features that bees, hummingbirds, butterflies, and finches find irresistible. All too soon, warm amber sun is replaced by crisp air that becomes laden with fog at each exhalation. Stems wither, leaves turn yellow, then brown, and grow brittle. I tend them one last time, gathering their remains and placing them in my compost pile. I celebrate them and prepare them to nurture future seasons' growth.

I chose to pursue a career in anatomy instead.

I tend to the donors in the peaceful solace of the anatomy labs. Rows of dissection tables await teams of students, aligned like rows of plants awaiting hovering bees. I nurture seedlings in that space, supporting the realization of their full potential. Dissections completed with perseverance, intent, and burgeoning skill are the bees, butterflies, hummingbirds, and finches that grace my gardens. They stir me to pause and wonder at the beauty and economy of design of the human form and the vigor of the learning that happens in this space. I marvel at the evolution of seedlings into mature forms, readying to share unique skills and talents with the world. I tend to the donors one last time, celebrating their gifts and preparing them for their final rest. Their work on this earth is complete, having nurtured a future seasons' growth.

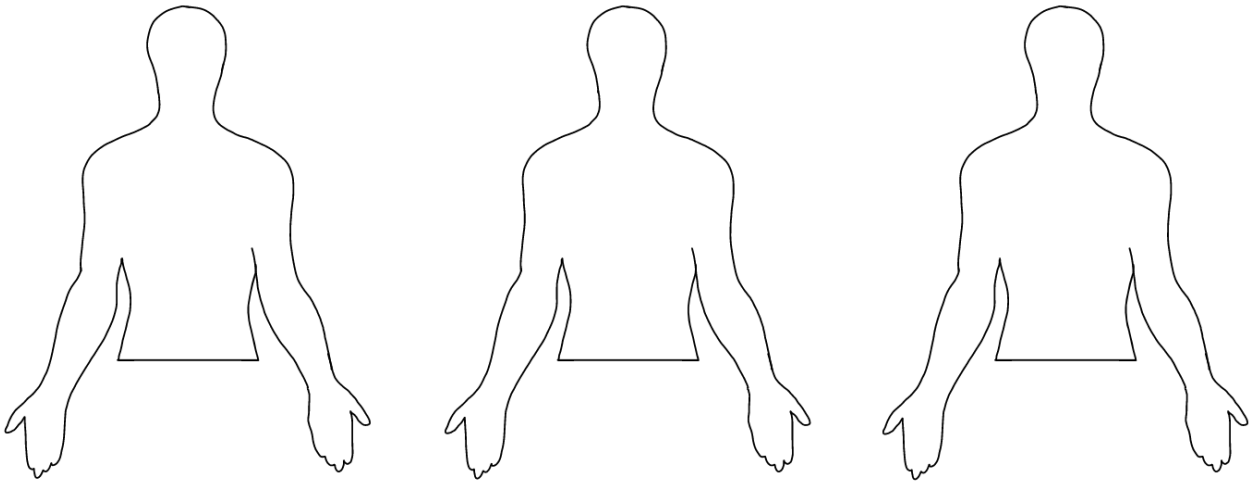
- Dr. Martha Gdowski

Basilic: derived from Arabic al-basilik = inner; the basilic vein is on the medial (inner) side of the arm and forearm. This term was originally thought to be of Greek origin, derived from the Greek basilikos = royal (king-sized.)

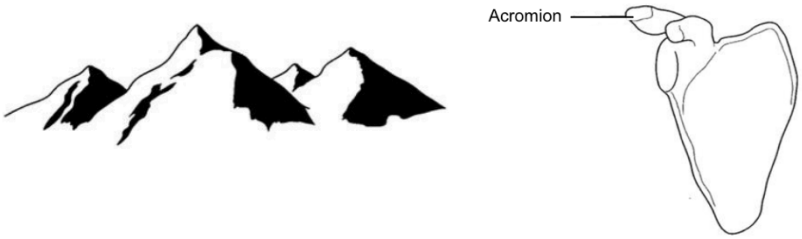
Cephalic: derived from Arabic al-kifal = outer; the cephalic vein is on the lateral (outer) side of the arm and forearm. This term was a mistranslation of Arabic. It was originally thought to be derived from Greek kephale = head.
Cubital: derived from Latin cubare = to lie down; due to the Roman habit of reclining on the elbow even when eating.

B. Back and Shoulder Regions

Check your Understanding: the superficial muscles of the back are associated with the upper limb. Use this space to review the muscles of the back.



Acromion: highest point of the shoulder; from akron = summit, or peak, and omos = shoulder.



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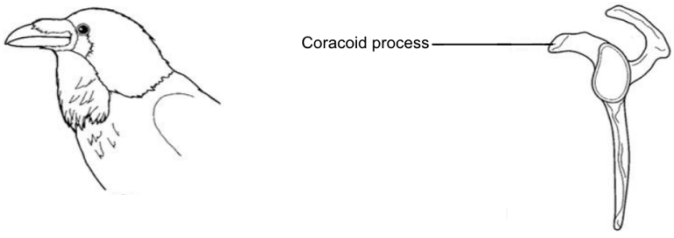
Coracoid: raven-like; from korax = crow or raven; coracoid process of the scapula resembles a raven's beak and provides attachment for a number of muscles.



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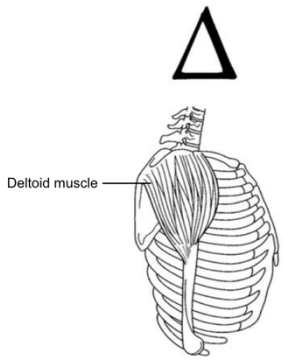
Circumflex: Latin circum = around, and flexere = to bend; hence, bent or bend around.

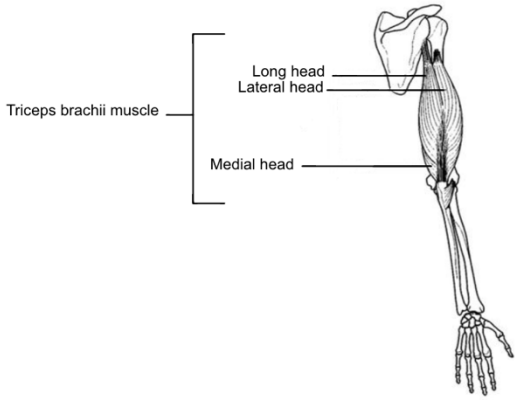
Supra: Latin prefix = superior to.

Teres: Latin = rounded, cylindrical.
Deltoid: upper case delta (shown below) is the 4th letter of the Greek alphabet; describes the inverted shape of the deltoid muscle.



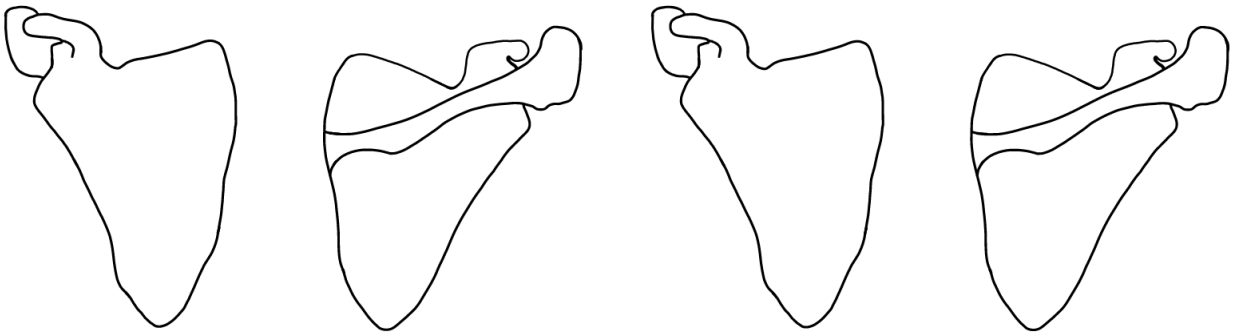
Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Triceps: three-headed; from tri = three, and caput = head.



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Check your Understanding: use this space to practice labeling the bony landmarks of the scapula, and the muscles of the rotator cuff.



II. Axilla and Arm

Learning Objectives

- Think about how it feels to dissect when your donor is supine, instead of prone.
- Draw the contents of the axillary sheath and the brachial plexus.
- Draw the muscles and blood supply of the anterior and posterior compartments of the arm.

Dissecting a body is weird. Some days I am simply astounded - the intricacies of the arterial branches supplying the trunk, the brachial plexus crossing and weaving into that landmark M, the details within the chambers of the heart. Such purpose contained in something so small. I want closer, taking it all in. Most days, I am ready to complete the task. Cut here, rotate this, find x. But there are moments where that is different. Moments when I see the dry, cracked lips of my donor's face and wonder if he was as thirsty and uncomfortable as my grandpap while he was sick. Moments where we find something - a variation in artery placement, a tiny growth on her brain - and know something about her that she never knew about herself. Seeing her massive heart, her defibrillator, her restructured vasculature - and wondering about the likely pain and fear - insight into her life revealed solely by her organs. Feeling protective of her prolapsed uterus while my classmates crowded around. Appreciating the irony between restoring her shoulder to a more comfortable, more natural position while being the most excited to use the bone saw. What a strange and beautiful task at hand.

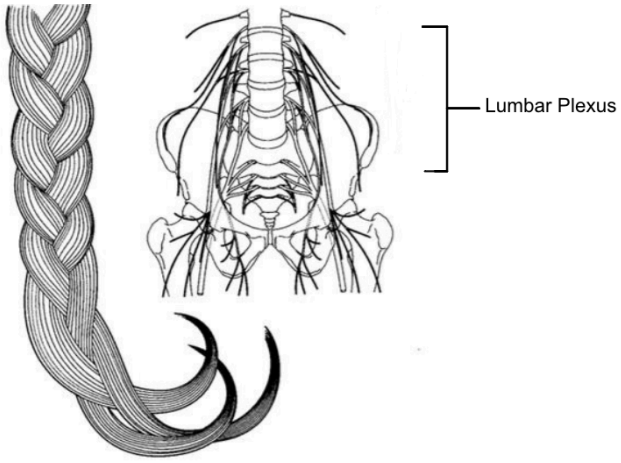
- Sara Peterson, Class of 2022

A. Anterior Wall

Pectoralis: from Latin pectoris = front of the chest.

B. Axilla & Axillary Contents

Plexus: from 'to plait' = to weave strands of material (hair, straw, or flax) into a braid, cord, or rope; a network of interconnecting nerves or vessels.



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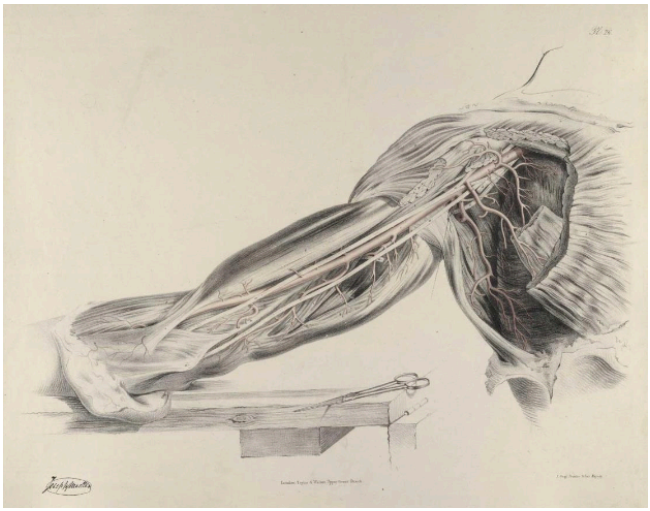
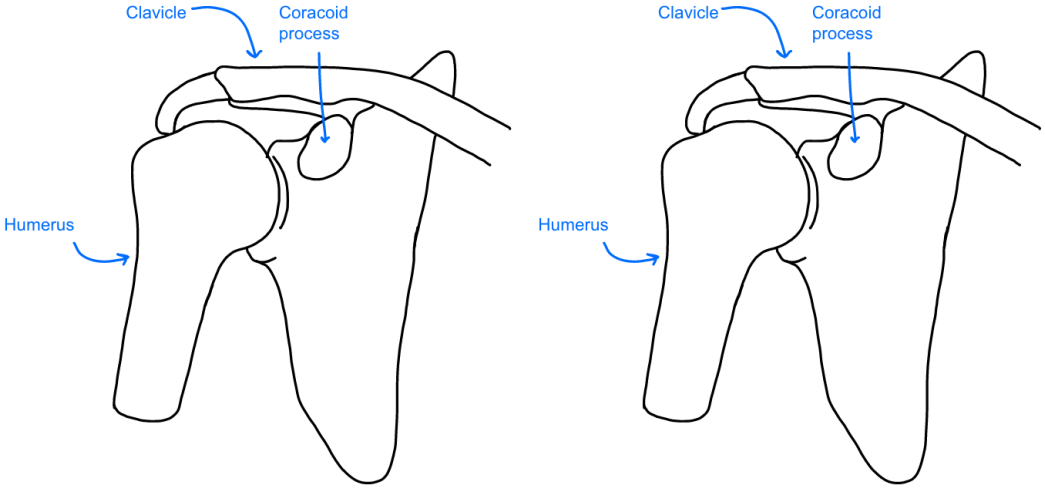
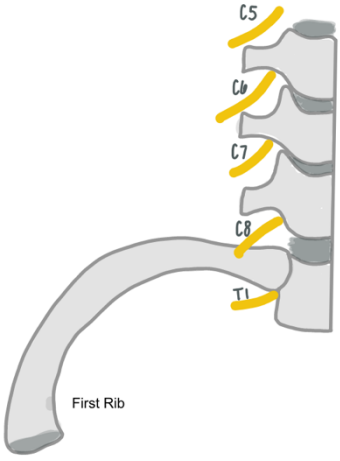


Check your Understanding: use the diagrams below to draw the axillary sheath and its contents. Also, identify the borders of the axilla.

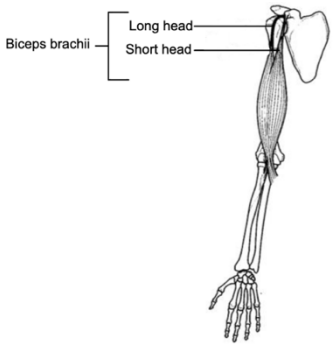


Check your Understanding: use this diagram to draw the brachial plexus, from the roots, to the five terminal branches.



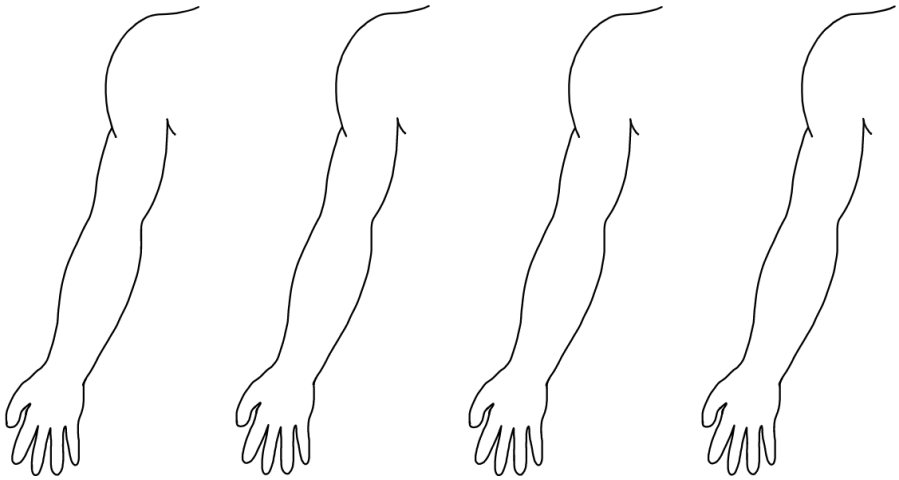
C. Arm

Biceps: two-headed; from bi = two, and caput = head.

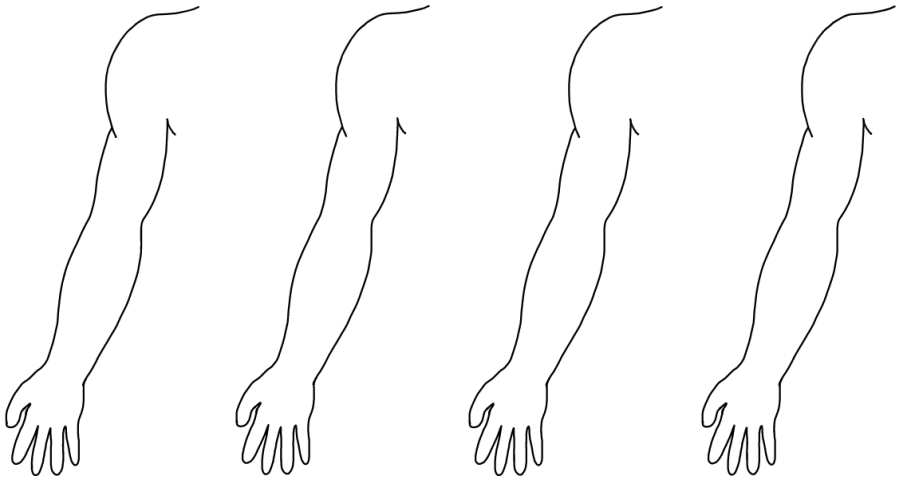


Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Check your Understanding: use the diagrams below to label the muscles, blood supplies, etc., of the anterior compartment of the arm.



Check your Understanding: use the diagrams below to label the muscles, blood supplies, etc., of the posterior compartment of the arm.



III. Flexor Forearm

Learning Objectives

- Reflect on the experience of learning your donor's name and profession.
- Notice how your lab team supports one another and notice the role that you play in this team.

Anatomy Lab, 1984

Stepping into the room filled with tables of sheet-covered forms
We approach tentatively
We look around at one other for support

Some say little, others joke awkwardly
The covers are pulled back by each team
I can't remember...
Was our body a woman, a man?

No image I can conjure
What I remember is the smell,
The pervasiveness of the formalin
That clings to every crevasse of our being all year
And the numbing of emotional response

There are a few nods to the fact that these were people
The whispered queries about who they might be
Where they come from
How they got here

Years later, during a discussion of that time with a colleague
He shared that surgery, as a previously prized profession
Was lost to him that year, when
The family of the cadaver they were dissecting turned up mid-class to claim him

What I remember is the first cut
The inflicting of a wound on this still body
Now I remember – a woman she was
The abdomen both smooth and wrinkled as we made that first cut

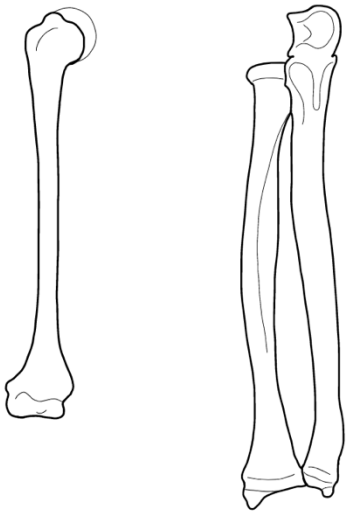
"Look", my classmate muttered under his breath
"underneath the skin we all look the same"
Something in the tone did not signal this as
A comment recognising our common humanity

I pulled myself closer in
This dissecting of black bodies
In Apartheid South Africa
Had never felt more violating

- Dr. Patricia Luck, Division of Medical Humanities & Bioethics

A. Bony Landmarks

Check your Understanding: use this diagram to label the landmarks on the humerus, radius, and ulna.



Humerus: Latin = the arm-bone.

Epicondyle: Greek epi = upon, and kondylos = knuckle; prominence on the part of the humerus that looks like a knuckle.

Captiulum: derived from Latin caput = head.

Trochlea: Greek trochilia = a pulley.

Oecranon: Greek olene = ulna, and kranion = upper part of head; upper part of the ulna.

Tuberosity: Latin tuber = a swelling or lump, usually large and rough.

Styloid: Greek stylos = an instrument for writing, and eidos = shape or form; hence a pen or pencil-like structure.

B. Forearm Structures

Carpi: Greek = wrist.

Digitorum: Latin digitus = a finger or toe.

Palmaris: Latin = palm.

Pollicis: possessive derivation of Latin pollex = thumb; hence, of the thumb.

IV. Palm

Learning Objectives

- Reflect on dissecting your donor's hands.
- Draw the tendons and nerves that pass through the carpal tunnel.
- Draw the muscles that contribute to the thenar and hypothenar eminences.
- Draw the motor and sensory innervation of the hand, and the muscles and tendons of the palm.
- Think about what it will be like to hold your patients' hands when needed or shake your patients' hands in greeting.

A. Introduction

I had three hands.
My right was holding the blade.
The left was pinching fancy tweezers.
The third was being taken apart.

I had to focus on all three hands at once.
Where the blade bit, where the pincers pulled.
Where the tendons took their path.
Using my hands to understand the inside of another.

There was a list to get through
muscles
nerves
compartments

There was no time to notice
the atrophied thenar eminence
the crooked fingers
the small tattoo on the wrist
the wrinkled skin

There was no time to see
the toll of decades of arthritis
the other hands this one might have held
the history written on her skin
the things these hands may have done

the third hand spoke its own story,
if the other hands could hear it.

Who was to say that this story was any less
Important than the items on the list.

- Antoinette Esce, Class of 2019

B. Bony Landmarks

Pisiform: Latin = pea-shaped.

Hamate: from Latin hammus = hook.

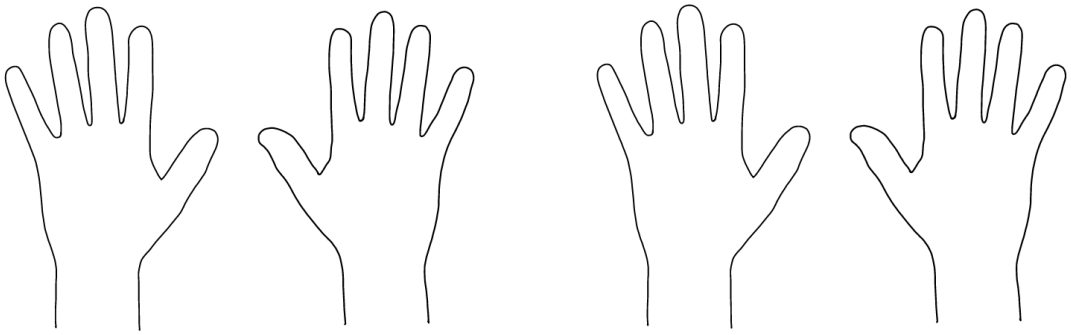
Triquetrum: Latin triquetrus = three-cornered.

Lunate: Latin lunatus = crescent, or halfmoon-shaped.

Scaphoid: Greek skaphoeides = boat-shaped, hollow.

Phalanges: from Latin phalanx = row of soldiers.

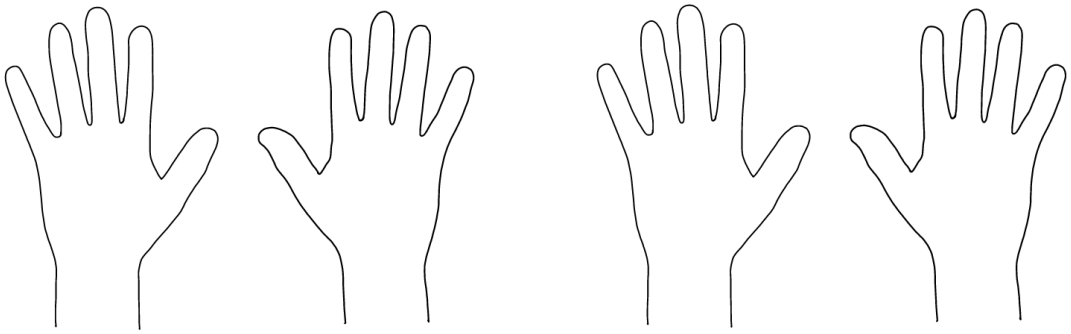
Check your Understanding: use this diagram to draw the eight carpal bones.



C. Wrist

Thenar: Greek = palm of the hand.

Check your Understanding: use these diagrams to draw the flexor retinaculum and the contents of the carpal tunnel.

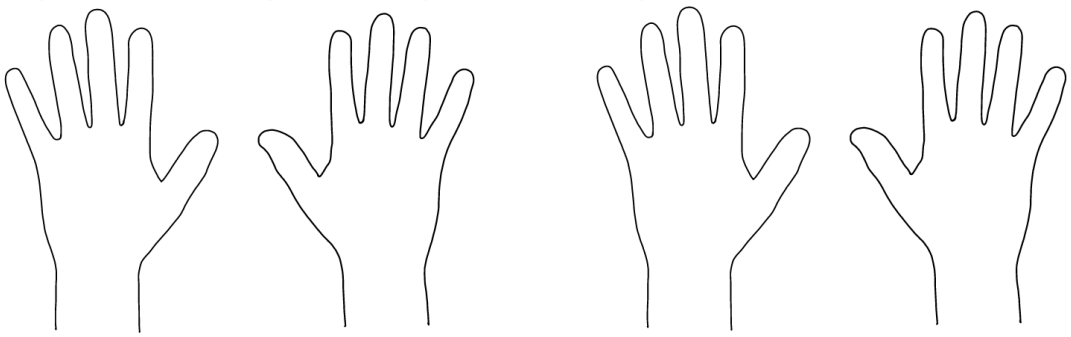


D. Digits

Lumbrical: Latin lumbricus = worm; hence, worm-shaped muscles.

Digiti: Latin digitus = a finger or toe.

Check your Understanding: use these diagrams to draw the innervation and blood supply of the palm.



V. Extensor Forearm and Dorsal Hand

Learning Objectives

- Draw the tendons that form the anatomical snuff box, the extensors of the forearm, and the innervation and blood supply of the forearm.

Pieces of Skin

I am connected with the soul that left
But she will never know her new cuts

As I slice and dice through reflections bisected connections left intact
I pause and remember how little I know

I try my best to imagine what she carried with her hands
as I cut pieces off of both of us that day
Her new wounds made entirely for my benefit
And I still remember so little of what I once knew

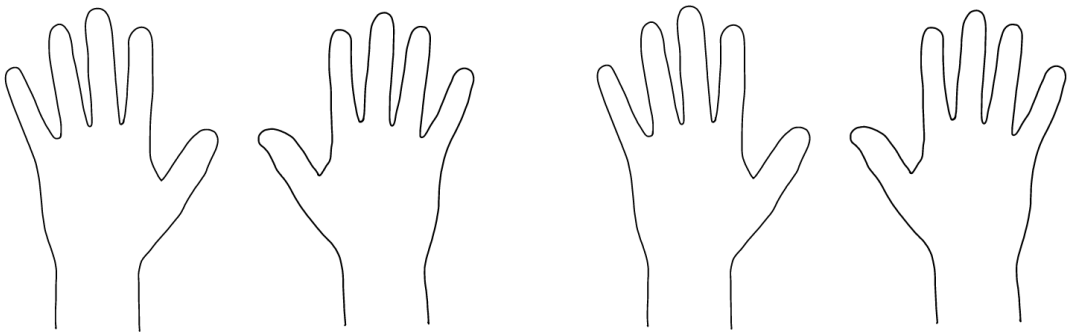
I am taught that every emotional pitfall is for my career but I can't
help but pray for the remnants I washed away
For me to make myself the subject of these cuts is selfish
I am connected with the soul that left

- Zain Talukdar, Class of 2023

A. Anatomical "Snuff Box"

The name anatomical "snuff box" comes from using the depression on the dorsal hand as a means of placement for the inhalation of powdered tobacco (dry snuff) and was first described in the medical literature in 1850 (Hallet, S. & Ashurst, JV.)

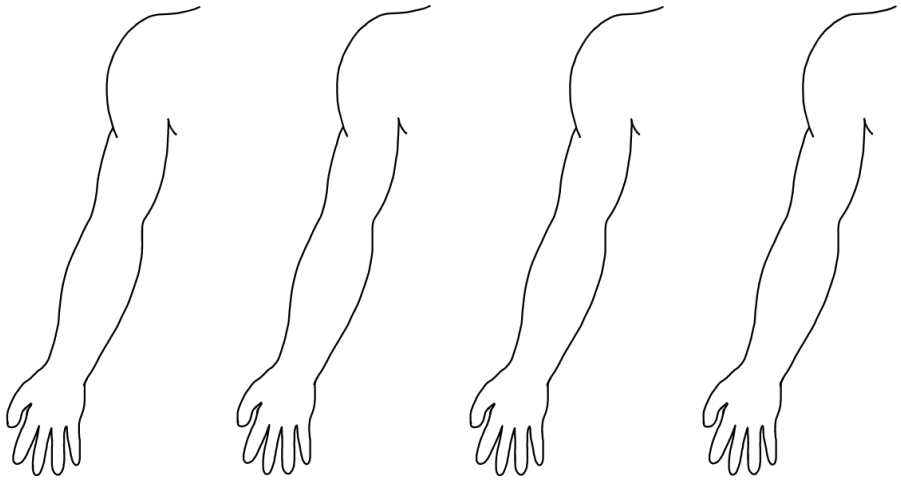
Check your Understanding: draw the tendons that form the anatomical "snuff box."



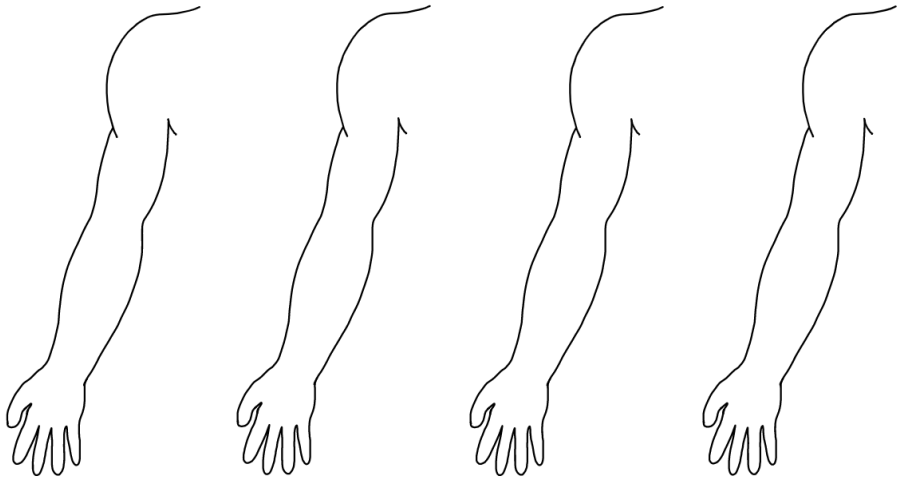
B. Superficial & Deep Extensors

Indicis: Latin index = a pointer.

Check your Understanding: draw the superficial and deep extensors of the forearm.



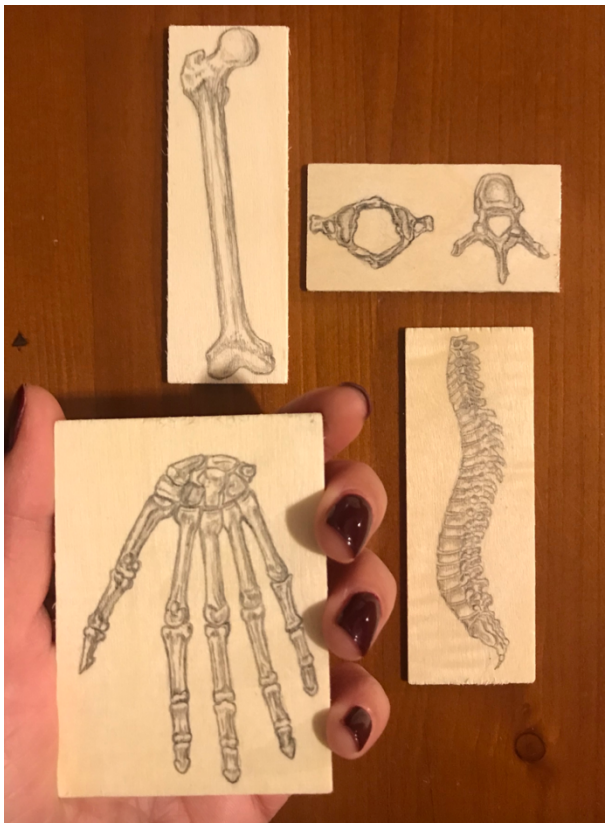
Check your Understanding: draw the innervation and blood supply of the forearm and dorsal hand.



VI. Joints of the Upper Limb

Learning Objectives

- Prepare with your team to see your donor's face.
- Take a step back to observe your donor's signs of aging.



Tianna Negron, Class of 2021

A. Shoulder Joint

Glenoid: Greek glene = socket, eidos = shape or form.

Labrum: Latin = rim.

B. Elbow Joint

Collateral: Latin con = together, and latus = side, hence, alongside.

Block I Bold Terms

I. Back and Spinal Cord

Scapula
Spine
Acromion
Superior angle
Inferior angle
Medial/Vertebral border
Iliac crest
Posterior superior iliac spine
Occipital bone
External occipital protuberance
Nuchal lines
Mastoid process
Cervical vertebrae
Transverse process
Transverse foramen
Spinous processes
Atlas
Axis
Vertebral foramen
Vertebral canal
Thoracic and lumbar vertebrae
- Body
- Vertebral arch

Pedicles
Laminae
Transverse process
Facets
Superior articular process
Inferior articular process
Spinous process
Facets
Rib and its head
Rib tubercle
Fibrocartilaginous intervertebral discs
Intervertebral foramen
Neurovascular bundles
Accessory nerve
Trapezius
Latissimus dorsi

II. Deeper Back Muscles and Spinal Cord

Rhomboids (major and minor)
Levator scapulae
Serratus posterior superior
Serratus posterior inferior
Splenius capitis
Splenius cervicis
Ligamentum nuchae
Semispinalis capitis
Erector spinae
Iliocostalis
Longissimus
Spinalis
Transversospinalis muscles
Interspinous ligaments
Ligamenta flava
Epidural space
Vertebral venous plexus
Dura mater
Arachnoid mater
Subarachnoid space
Pia mater
Denticulate ligaments
Anterior and posterior roots and rootlets
Dorsal root ganglion (DRG)
Conus medullaris
Cauda equina
Filum terminale
Dermatome

III. Shoulder

Basilic vein
Cephalic vein
Median cubital vein
Scapula
- acromion
- spine
- supraspinous fossa
- infraspinous fossa
- glenoid cavity
- supraglenoid tubercle
- infraglenoid tubercle
- coracoid process
- scapular notch

Humerus
- head
- greater tubercle
- lesser tubercle
- intertubercular sulcus (bicipital groove)
- deltoid tuberosity
- sulcus for radial nerve (spiral groove)

Deltoid muscle
Axillary nerve

Posterior circumflex humeral artery
Quadrangular space
Triceps brachii
- long head
- lateral head
- medial head

Teres minor
Teres major
Radial nerve
Deep (profunda brachii) brachial artery
Supraspinatus
Infraspinatus
Suprascapular nerve
Suprascapular artery
Superior transverse scapular ligament
Rotator cuff

IV. Axilla and Arm

Basilic & Cephalic vein
Median cubital vein
Pectoralis major
Deltopectoral triangle
Lateral pectoral nerve
Medial pectoral nerve
Pectoralis minor and major
Thoraco-acromial artery
Serratus anterior muscle
Biceps brachii
- long head
- short head

Coracobrachialis
Axillary artery
Axillary veins
Superior thoracic artery
Lateral-thoracic artery
Subscapular artery
Thoracodorsal artery
Circumflex scapular artery
Posterior circumflex humeral artery
Anterior circumflex humeral artery
Brachial plexus
- lateral cord
- medial cord
- posterior cord

Musculocutaneous nerve
Median nerve
Ulnar nerve
Axillary nerve
Radial nerve
Medial cutaneous nerve of the forearm
Lateral cutaneous nerve of the forearm
Subscapular nerves
Thoracodorsal nerve
Long thoracic nerve
Brachialis
Radial artery
Ulnar artery

V. Flexor Forearm

Humerus
- medial epicondyle
- lateral epicondyle
- capitulum
- trochlea

Suprascapular nerve
Suprascapular artery
Superior transverse scapular ligament
Rotator cuff
- olecranon fossa

Radius
- head
- neck
- tuberosity
- styloid process
- interosseous border

Ulna
- head
- olecranon
- interosseous border

Pronator teres
Flexor carpi radialis
Palmaris longus
Flexor digitorum superficialis
Flexor carpi ulnaris
Cubital region
Radial artery
Ulnar artery and nerve
Brachial artery
Median nerve
Common interosseous branch of ulnar artery
Anterior interosseous branch
Interosseous membrane
Brachioradialis
Superficial branch of radial nerve
Deep branch of radial nerve
Supinator muscle
Flexor digitorum profundus

Flexor pollicis longus
Pronator quadratus

VI. Palm

Thenar eminence
Hypothenar eminence
Scaphoid
Lunate
Triquetrum
Pisiform
Trapezium
Trapezoid
Capitate
Hamate
Metacarpal bones
Phalanges
Proximal phalanx
Middle phalanx
Distal phalanx
Palmar aponeurosis
Palmaris brevis
Superficial palmar arterial arch
Ulnar artery
Common digital arteries
Proper digital arteries
Flexor retinaculum (transverse carpal ligament)
Carpal tunnel
Median nerve
Recurrent branch of the median nerve
Abductor pollicis brevis
Opponens pollicis
Flexor pollicis brevis
Abductor digiti minimi
Opponens digiti minimi
Flexor digiti minimi brevis
Lumbrical muscles
Extensor expansion
Pronator quadratus muscle
Deep branch of the ulnar nerve
Adductor pollicis muscle
Deep palmar arterial arch
Palmar interossei muscles

VII. Extensor Forearm and Dorsal Hand

Abductor pollicis longus
Extensor pollicis brevis
Extensor pollicis longus
First dorsal interosseous muscle
Extensor retinaculum
Brachioradialis
Extensor carpi radialis longus
Extensor carpi radialis brevis
Extensor digitorum
Extensor digiti minimi
Extensor carpi ulnaris
Abductor pollicis longus
Extensor pollicis brevis
Extensor pollicis longus
Supinator
Extensor indicis
Deep branch of the radial nerve
Dorsal interosseous muscles
Extensor expansion
Lumbricals
Interossei

VIII. Joints of the Upper Limb

Subscapularis muscle
Glenohumeral ligaments
Glenoid cavity
Glenoid labrum
Tendon of the long head of the biceps
Coraco-acromial ligament
Coraco-clavicular ligament
Ulnar collateral ligament
Radial collateral ligament
Anular ligament

Block I Reflections

Chapter 1

I. Back

What did it feel like to be in the anatomy lab for the first time?

Looking forward, what are some challenges you can imagine that you will face in the lab?

How will you address these challenges?

In what ways did your group function as a unit?

What are some strengths that you can bring to your lab group?

Aside from the anatomy that you see in the historical images shown above, what else do you see?

II. Deeper Back Muscles and Spinal Cord

Reflect on the biological gender of your donor.

Chapter 2

I. Shoulder

How do you refer to your donor?

Do you use donor, cadaver, or another name, and why?

What has been your experience interacting with other donors?

In what ways have you made positive contributions to your lab team?

Are these the ways that you had expected?

II. Axilla and Arm

Was it different to dissect having the donor in a supine, instead of a prone position?

What are your donor's muscles like? What colors do you see? Have you noticed any scars, fractures, or calcifications?

What do your observations tell you about your donor?

What do you think it was like to live in your donor's body?

III. Flexor Forearm

How did it feel to have a palmaris longus or not?

What was it like to learn your donor's name?

What was it like to learn your donor's profession?

What was it like to learn your donor's age and cause of death?

Did you and your teammates have similar or different reactions to learning information about your donor?

IV. Palm

What was it like for you to dissect the hand?

V. Extensor Forearm and Dorsal Hand

Is it hard to imagine your donor as a lived body?

Based on your observations, what would it be like to live in your donor's body?

How do your donor's hands compare to the hands of other donors that you have studied with?

VI. Joints of the Upper Limb

What signs of aging do you see on your donor?

What signs of aging do you see on other donors?

What was it like to see your donor's face? How did you feel before the face was revealed? Was it what you expected?

Have you seen the faces of other donors? If so, how do they compare to your donor's face?

How did your group members support one another during today's lab?

Post-Exam Reflection:

What was the process of taking the exam like for you?

What was it like to stand beside 25 donors during the exam?

Block II, Chapter 3

Thorax and Root of the Neck

I. Thoracic Wall

Learning Objectives

- Reflect on the donors' decisions to donate their bodies.
- Think about how your views of the anatomy lab have changed or remained the same since the first day of lab.
- Consider the reflection questions with your lab group. Listen to each other's perspectives and learn from one another.

A. Introduction

I am SO hungry, I am SO tired, I am SO far behind. I am SO desirous to own ALL of this material in front of me...

As I take a break from dissection and look down at my slice of pizza, I see the atrophic muscles of my cadaver's bicep in the pepperoni, I see his fat strewn throughout the layers of his abdomen, torso, hips and thighs like the cheese of my meal... seeping through my napkin. The grease from the pizza mirrors the grease stains of my lab coat. The emulsified fat of my patient, intermixed with my pizza... now my own fat. I'm so tired that I'm intertwining visions of eating my dinner and creating my own cadaveric future... Is this what it is like to be in medicine? Will there ever be a line between dinner and lab or will they mingle forever, one and the same?

I am so hungry, I am SO tired, I am SO far behind. I am SO desirous to own ALL of this material in front of me...

- Dr. Flavia Nobay

Kyphosis: Greek kuphosis = bent, or hunchbacked.

Lordosis: Greek lordos = bent backwards.

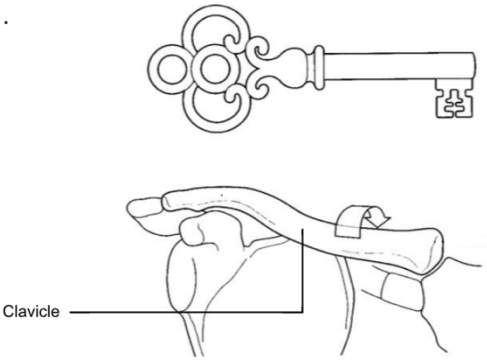
Scoliosis: Greek skolios = bent.

B. Bony Landmarks

Sternum: Greek sternon = chest.

Clavicle: Latin clavicula = a small key.

Manubrium: from Latin = haft, or handle.



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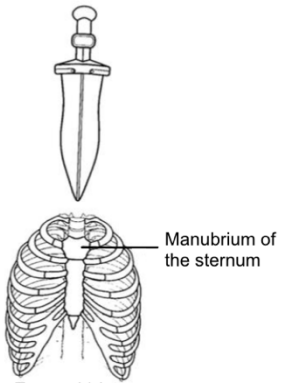
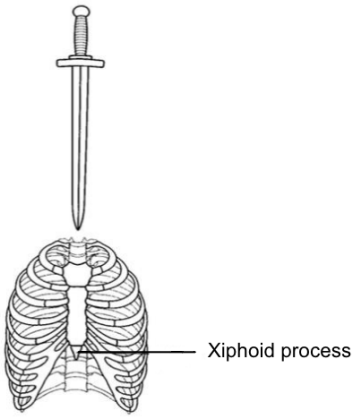


Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Xiphoid: from Greek xiphos = sword, Greek suffix –oid = form, resemblance, shape, likeness; hence, sword-shaped.



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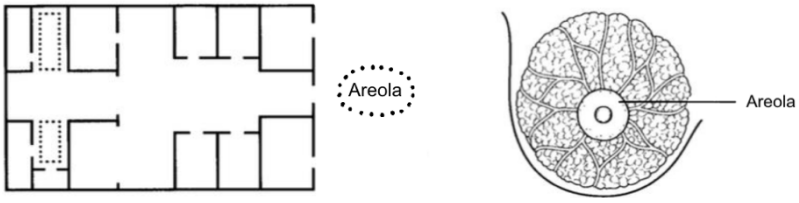
C. Female Breast

Areola: a small circular courtyard or open space of ground in front of a Roman house.



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D. Muscles, Nerves, and Vessels

Costal: Latin costa = rib.

II. Pleural Cavities and the Lungs

Learning Objectives

- Draw the features of the lungs and the hila.
- Imagine what it will be like to auscultate your patient's lungs.
- Compare and contrast the lungs of different donors.

A. Introduction

I view the donors as friendly participants. The fact that they chose to donate their bodies for dissection prevents me from seeing them as entirely passive, or as victims. Their choice also leads me to believe that we have not only their permission but their invitation to dissect their remains and learn. I believe that as long as we do all things in the anatomy lab for the sake of learning (so that eventually the anatomical gift can be paid forward in patient care and treatment), then no matter how invasive or destructive the dissections may be, our intentions and actions are consistent with the donors' wishes, and therefore are fine.

- Dr. Sarah McConnell

Visceral: Latin viscus = internal organ.

Parietal: Latin parietalis, pertaining to paries = wall.

Diaphragm: Greek dia = across, and phragma = a wall or fence.

B. Pleural Cavities

Pleura: Greek = side of the body, rib.

C. The Lungs

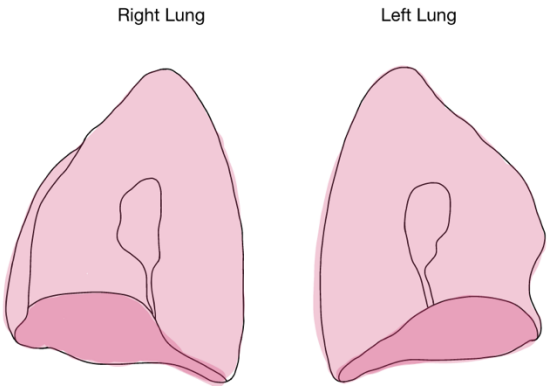
Phrenic: from Greek phren = diaphragm, mind (the mind was once thought to lie in the diaphragm).

Fissure: from Latin findere = to split.

Hilum: from Latin = little thing, trifle; the scar left on a seed coat by its attachment to the plant.

Alveolus: Latin = a small cavity.

Check your Understanding: draw the distinguishing features of the right and left lungs and their respective hila.



III. Mediastinum and Heart

Learning Objectives

- Think about holding different human hearts in your hands.
- Reflect on the complexity of the heart and what it will be like to learn how to listen to heart sounds.

A. Introduction

Today I held your heart. I put my fingers
around your vessels. I washed until
they glowed and your blood shook out
in so many shades of rust. And, yes, it's true,
only the other morning I broke
your spine. I shivered at your bony ridges,
the color of so many whitened trees
in winter. Afterwards, I carved into
your wrinkles until I found
that startled dark pink, and I uncurled
your stiff fingers to lay my thumb
on your palm, your tendons drawn
under the weak October light.
I want you to know that this is beautiful—
your barrel chest and wasted thighs,
your singing neck and painted nails,
even the crusts on your skin and the hair
on your upper lip. I want you to know
that of those who have held you close,
I have held you closer, my hands
cradled around your brain or pressed
warm against your ribs. In the end,
I want you to know how we smell you
on our skins as we walk to the locker room,
how we undress, our backs turned
in modesty, covering our secrets—
what we are naked and on the inside—
your body reflected in all of ours,
no perfect mirror but enough to make us
nervous, so awed and almost fearful
at the quiet pulse within us.

- Jennifer Hu, Class of 2018

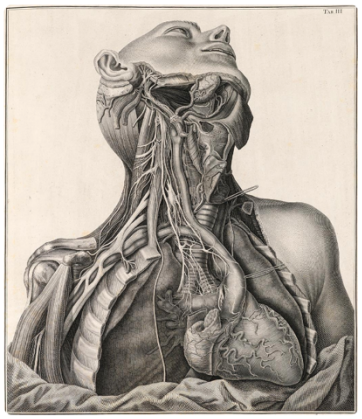
Mediastinum: from Latin mediums = middle.

B. Pericardium

Pericardium: Greek peri = around, and kardia = heart; hence the membranes enclosing the heart.

Serous: from French sereux, or Latin serosus = serum.

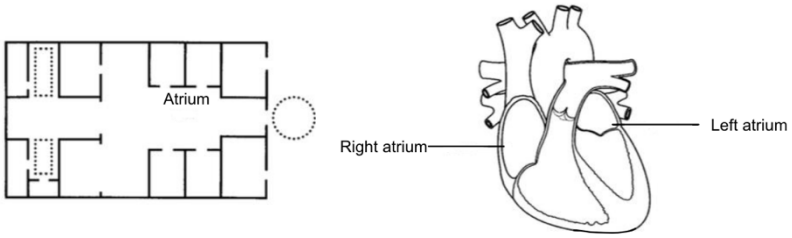
Sinus: Latin = recess, hollow space.



Scarpa, 1794

C. Heart and Great Vessels

Atrium: Latin = a formal hall or court, the focal point of a Roman house; a central room.



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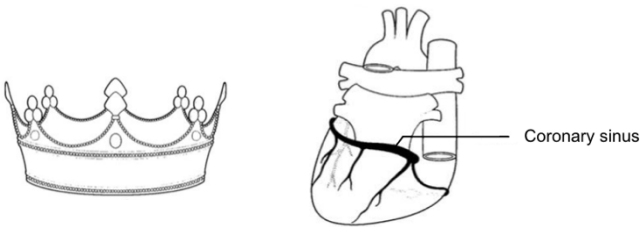
Ventricle: from Latin ventriculus, diminutive of venter = belly.

Vena cava: Latin vena = vein, cava = hollow; hence, hollow vein.

Vagus: Latin = wandering.

D. Cardiac Vessels

Corona: Latin = wreath, crown.



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E. Interior of Heart

Pectinate: Latin pectinatus = resembling a comb.

Trabecula carneae: diminutive of Latin trabs = a beam; Latin carnea = fleshy. Hence little cords of flesh that support a structure.

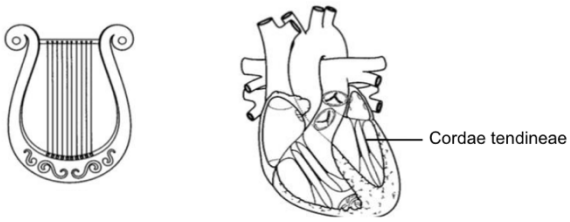
Papillary: from Latin papula = small protuberance.

Moderator band (septomarginal trabecula): named because it was thought to prevent overdistension of the ventricle. It was first described by Leonardo Da Vinci in his exploration of the human body.

Commisure: Latin con = together, and missum = sent; hence, fibers which cross between symmetrical parts.

Infundibulum: Latin = funnel.

Chordae: from Latin cord = catgut, or a string from a musical instrument like a lyre (a stringed instrument like a small U-shaped harp with strings fixed to a crossbar, used especially in ancient Greece).



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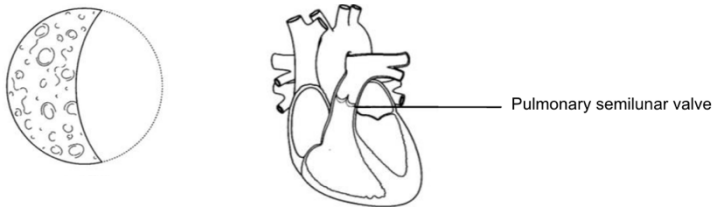
Septum: Latin saeptum = fenced in; hence, a dividing fence or partition.

Semilunar: Latin semi = half, and luna = moon; hence, having a half-moon shape.



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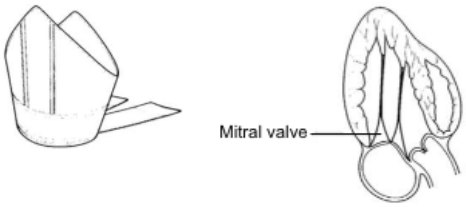
Mitral: shape of a mitre, an ornate ceremonial headdress worn by Christian bishops.



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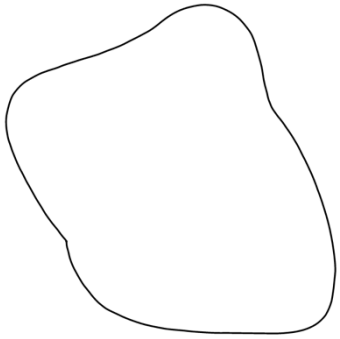
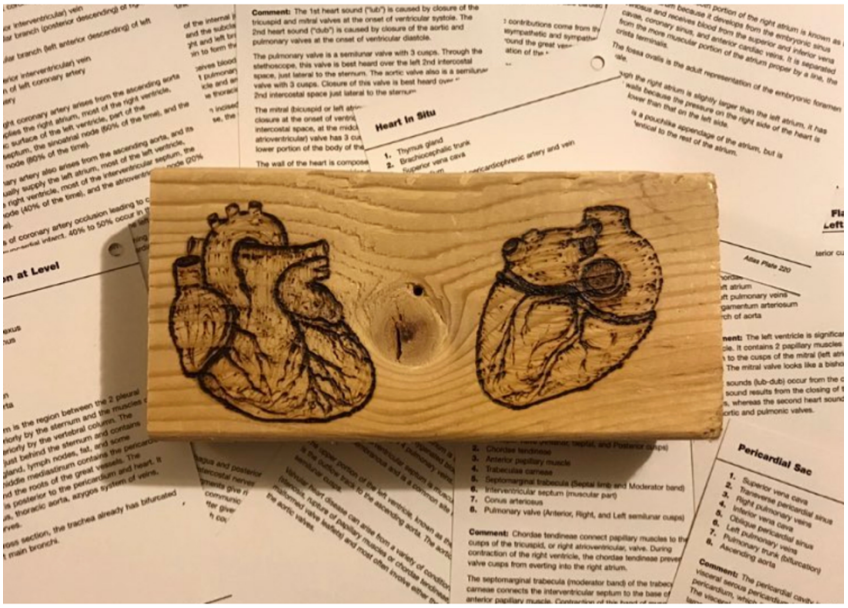
Check your Understanding: draw the features of the heart and its blood supply on this frontal section of the heart.



IV. Posterior and Superior Mediastinum

Learning Objectives

- Draw the great vessels in the superior mediastinum.
- Observe the empty chest cavity.
- Think about this history of the medical profession, and what being a doctor means to you.



Tianna Negron, Class of 2021

A. Posterior Mediastinum

Laryngeal: relating to the larynx; Greek larynx = voice-box.

Azygos: Greek a = negative, and zygos = paired; hence, unpaired.

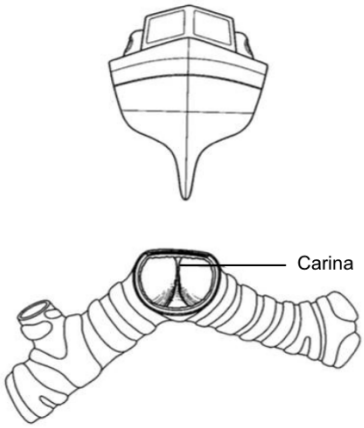
B. Superior Mediastinum

Brachiocephalic: Latin brachium = arm, Greek kephale = head; hence a blood vessel related to the upper limb and head.

Thymus: Greek thymos = warty excrescence (outgrowth).

Trachea: Greek trakheia = rough, referring to its corrugations.

Carina: from Latin keel; a flat blade sticking down into the water from a sailboat's bottom.



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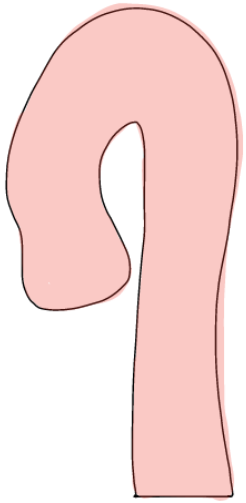
Check your Understanding: draw the branches of the aortic arch.



V. Anterior Triangle and Root of the Neck

Learning Objectives

- Think about the dynamic of your lab team and the role that you play in your group.

A. Introduction

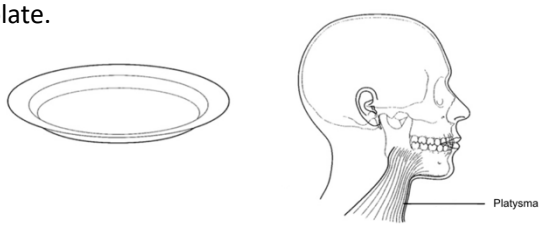
Having prior experience dissecting a donor I had already gone through the gore and disgust that naturally I would have felt. However, the experience had produced a greater sense of appreciation for the donor. The specific, delicate, and long dissections utterly surprised me and for an individual to give their body so that I may learn is a privilege that I will share for the rest of my life. My ability to take care of patients started with the donor and the people that I help will forever be a result of the lessons I have learned through my donor. For that I am tremendously grateful.

- Filip Korityssiky, Class of 2022

Fascia: Latin = band, door frame; hence the fibrous wrapping of muscles.

B. Superficial Structures

Platysma: Greek = flat piece, plate.



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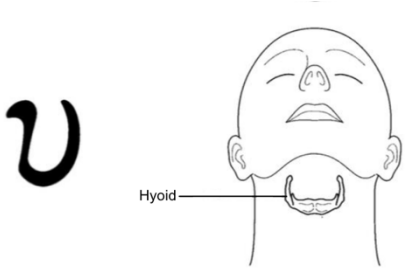
Hyoid: Greek = U-shaped; lower case upsilon is the 20th letter of the Greek alphabet.



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Cricoid: ring-like; Greek krikos = a ring, the suffix –oid = like

Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

C. Muscular Triangle

Omohyoid: Greek omos = shoulder; hence, a muscle attached to the scapula and hyoid.

D. Carotid Triangle

Hypoglossal: Greek hypo = under, and glossa = tongue.

Ansa: Latin = a handle or loop.

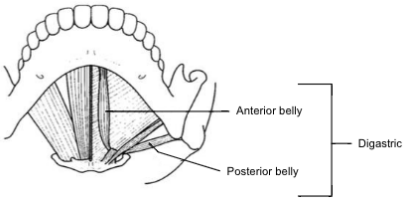
Carotid: from Greek karoun = stupefy (the compression of these arteries was thought to cause stupor).

Jugular: Latin jugulum = neck.

Lingual: Latin lingua = tongue.

E. Submandibular Triangle

Digastric: Latin di- = twice, gaster = belly; hence, having two bellies.



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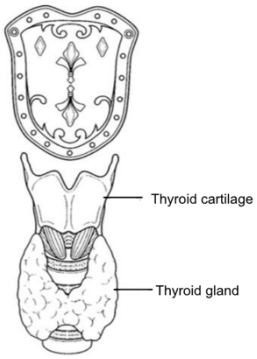
Mylohyoid: Greek mylo = molar, and hyoeides = U-shaped.

F. Thyroid Gland

Thyroid: from Greek thureoeides = shield-shaped.



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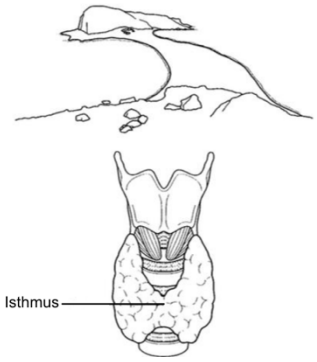
Isthmus: Greek isthmos = a narrow strip of land connecting two larger areas of land.



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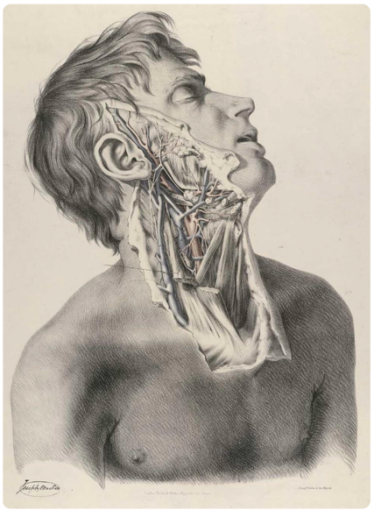
G. Parathyroid Glands

Parathyroid: Greek para = beside, and thyroid; hence, beside the thyroid.

H. Base of the Neck

Sympathetic: Greek syn = together and pathos = feeling.



Quain, 1844

VI. Posterior Triangle of the Neck

Learning Objectives

- Think about your donor's muscles.
- Compare and contrast your donor to other donors that you have studied with.

Splenius: from Greek splenion = bandage.

Levator: Latin = a person who lifts.

Scalenus: from Latin scalenus musculus = unequal muscle.

Block II Bold Terms

I. Thoracic Wall

Kyphosis
Scoliosis
Sternum
- Manubrium
- Body
- Xiphoid process

Ribs
- Head
- Neck
- Tubercle
- Body

Neurovascular bundle
Thoracic vertebra
- Body
- Pedicles
- Laminae
- Spinous process
- Articular process

Jugular notch
Sternal angle
Clavicle
Acromion of the scapula
Female breast
Suspensory ligaments
Nipple
Areola
Lactiferous ducts
Intercostal muscles
- External intercostal
- Internal intercostal
- Innermost intercostal

Internal thoracic (mammary) artery and veins
Transversus thoracis muscle
Sternocostal joints
Intercostal nerve and vessels
Thymus gland
Right and left brachiocephalic veins
Superior vena cava (SVC)
Azygos vein

II. Pleural Cavities and the Lung

Pleural sacs
Visceral pleura
Parietal pleura
- Costal
- Mediastinal
- Diaphragmatic
- Cervical

Phrenic nerves
Abdominal diaphragm
Inferior lobe of lung
Superior lobe of lung
Oblique fissure
Horizontal fissure
Middle lobe
Bronchus
Pulmonary artery
Pulmonary veins
Hilum
Pulmonary ligament
Pulmonary lymph nodes
Lobar (secondary) bronchi
Segmental (tertiary) bronchi
Bronchopulmonary segment
Descending thoracic aorta
Intercostal arteries

III. Mediastinum and Heart

Mediastinum
Fibrous pericardium
Serous pericardium
Parietal serous layer
Visceral serous layer
Transverse pericardial sinus
Oblique pericardial sinus
Right atrium
Right ventricle
Superior vena cava
Ascending aorta
Pulmonary trunk
Left vagus nerve
Aortic arch
Recurrent laryngeal nerve
Ligamentum arteriosum
Inferior vena cava
Apex
Coronary/atrioventricular groove
Interventricular grooves
Aortic valve
Pulmonary trunk
Pulmonic valve
Right coronary artery
Marginal branch
Posterior interventricular branch (posterior descending)

Right atrial branch
Left coronary artery
Anterior interventricular (left anterior descending/LAD)
Circumflex branch
Left marginal branch
Cardiac veins
Great cardiac (anterior interventricular) vein
Middle cardiac (posterior interventricular) vein
Pectinate muscles
Crista terminalis
Fossa ovalis
Coronary sinus
Valve of the coronary sinus
Right atrioventricular (tricuspid) valve
Commissures of tricuspid valve
Chordae tendineae
Papillary muscles
Septomarginal trabecula (moderator band)
Trabeculae carneae
Conus arteriosus/infundibulum
Pulmonary semilunar valve
Left atrium
Four pulmonary veins
Left atrioventricular or mitral valve
Commissures of mitral valve
Pectinate muscles
Left ventricle
Aortic semilunar valve
Nodule
Interventricular septum

IV. Posterior and Superior Mediastinum

Esophagus
Esophageal plexus
Left vagus nerve
Recurrent laryngeal nerve
Ligamentum arteriosum
Left common carotid artery
Subclavian artery
Azygos vein
Intercostal veins
Right vagus nerve
Thoracic lymphatic duct
Descending thoracic aorta
- Intercostal branches

Sympathetic trunk
Sympathetic chain ganglia
Rami communicantes
Greater splanchnic nerves
Superior mediastinum
Thymus gland
Right and left brachiocephalic veins
Superior vena cava
Brachiocephalic trunk
Left common carotid artery
Left subclavian artery
Phrenic nerves
Tracheobrachail lymph nodes
Carina
Azygos and hemi-azygos system of veins

V. Anterior Triangle and Root of the Neck

Deep cervical fascia
Investing fascia
Pretracheal fascia
Prevertebral fascia
Platysma muscle
Sternocleidomastoid muscle
Accessory nerve
Hyoid bone
Thyroid cartilage
Cricoid cartilage
Trachea
Facial vein
Retromandibular vein
Anterior jugular vein
Superior belly of the omohyoid
Inferior belly of the omohyoid
Sternohyoid muscle
Sternothyroid muscle
Thyrohyoid muscle
Cricothyroid membrane
Carotid triangle
- Superior belly of the omohyoid
- Posterior belly of the digastric
- Anterior border of the sternocleidomastoid

Hypoglossal nerve
Carotid sheath
Superior root of the ansa cervicalis
Inferior root
Vagus nerve
Common carotid artery
Internal jugular vein
Superior laryngeal nerve
Thyrohyoid membrane
Superior laryngeal artery
Cricothyroid muscle

Common carotid artery
Internal carotid artery
Internal jugular vein
External carotid artery
Superior thyroid artery
Lingual artery
Facial artery
Occipital artery
Carotid sinus region
Carotid body
Internal jugular vein
Superior thyroid vein
Submandibular salivary gland
Mylohyoid muscle
Anterior and posterior bellies of the digastric
Stylohyoid muscle
Thyroid gland
Isthmus
Pyramidal lobe
Superior and inferior thyroid arteries
Recurrent laryngeal nerves
Thoracic duct
Transverse cervical artery
Suprascapular artery
Thyrocervical trunk
Subclavian artery
Vertebral artery
Sympathetic trunk

VI. Posterior Triangle of the Neck

Sternocleidomastoid muscle
Trapezius muscle
Accessory nerve
Subclavian vein
Transverse cervical artery
Suprascapular artery
Scalenus anterior muscle
Thyrocervical trunk
Splenius capitis
Levator scapulae
Scalenus posterior
Scalenus medius
Subclavian artery
Brachial plexus
Phrenic nerve

Block II Reflections

Chapter 3

I. Thoracic Wall

How do you view being an anatomical donor?

Would you want to donate your body? Why or why not?

Do you think that anatomical donors have true informed consent?

II. Pleural Cavities and the Lungs

What did your donor's lungs feel like in your hands?

Have you noticed any differences between your donor's lungs, and other donors' lungs?

Think about the translation of the word "phrenic." What do you think it was like to dissect in the nineteenth century?

III. Mediastinum and Heart

What did you anticipate in holding a donor's heart? What did it feel like?

What will you picture when you listen to heart sounds?

IV. Posterior & Superior Mediastinum

What do you think it was like to be a physician in the 16th/17th century? What did physicians value, and what qualities did physicians need to have?

What are your values as a future physician? What qualities do you think a present-day physician should have?

V. Anterior Triangle and Root of the Neck

Reflect on dissecting the neck.

VI. Posterior Triangle of the Neck

Compare your donor's muscles to the muscles of other donors. What is the same, and what is different?

Do you have a favorite donor to study with aside from your own? Why or why not?

From your perspective, what makes your donor easier or harder to work with?

Post-Exam Reflection:

What was the process of taking the exam like for you?

What was it like to stand beside 25 donors during the exam?

Block III, Chapter 4

Head and Neck

I. Face

Learning Objectives

- If you haven't already, decide as a group when to look at your donor's face.
- Use your atlas and your bone box to learn the bony landmarks of the face.

A. Introduction

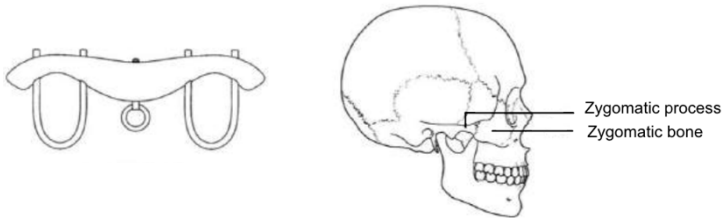
My first dissection experience was 44 years ago, but I still remember my feelings as I began my first dissection of a human donor. I began with feelings of excitement and curiosity, but also with some anxiety at the responsibility I was given. Respect for the gift was paramount, and I did not want to ruin the dissection for myself or my lab partners. I see the same reactions I felt in the students that I now teach. After these many years, I do not remember my reactions to making the first incision or invading the body, but what I do remember are the reactions of my lab partners. One in particular did not display the level of respect or care that I believed was appropriate and I was distressed by his actions. After these many years, I still feel the excitement and curiosity as a new course begins. Equally important, to me at least, is the respect each student shows to the donor and their classmates.

- Dr. John Olschowka

B. Bony Landmarks

Maxilla: Latin = jaw.

Zygomatic: Greek zygon = yoke or crossbar that hitches two animals together to draw a plow; a yoke is similar in shape to the bony zygomatic arches on both sides of the skull which form the cheek bones.



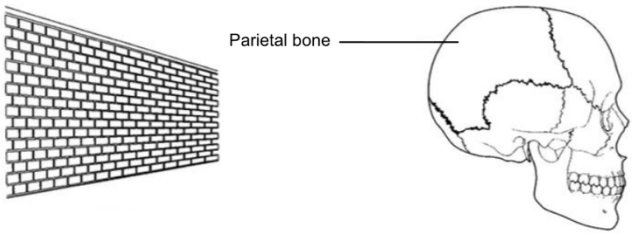
Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Mandible: Latin mandere = to chew.

Occipital: Latin prefix ob- = prominent, and caput = head; hence the prominent convexity of the back of the head.

Frontal: Latin frontis = of the forehead.

Parietal: Latin paries = house wall; any enclosing wall-like structure.



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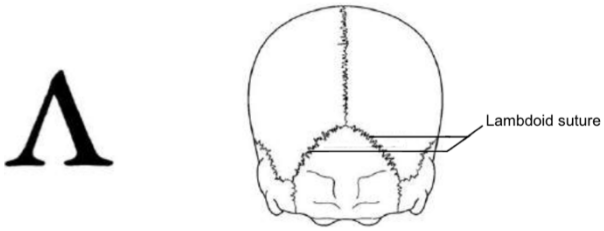
Mastoid: Greek mastoeides = breast-shaped.

Coronal: from Latin corona = wreath or crown.

Sagittal: from Latin sagittal = arrow.

Lambdoid: uppercase lambda is the 11th letter of the Greek alphabet.



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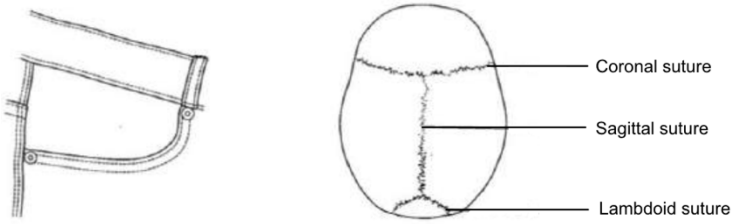
Bregma: from a Greek word implying moist, referring to the site of the anterior fontanelle, the site of junction of the coronal and sagittal sutures.

Suture: Latin sutura = a seam; the line where two skull bones meet, as in a seam.



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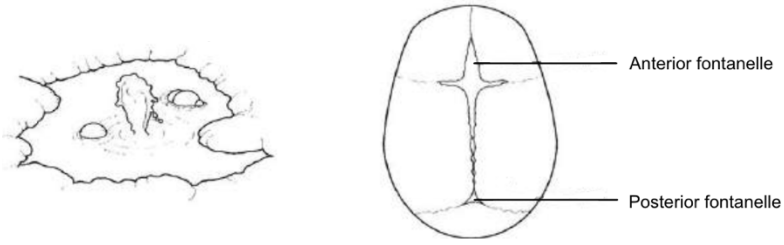
Fontanelle: from Latin fons = fountain or little water-spring.



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II. Interior of Skull and Brain Removal

Learning Objectives

- Think about what it will feel like to hold a human brain in your hands.
- Draw the blood supply to the meninges.
- Draw the dural sinuses.
- Draw the flow of CSF.
- Draw the blood supply to the brain.
- Draw the 12 pairs of cranial nerves on the base of the skull.

A. Introduction

As a student, I first experienced Anatomy lab upon entering a large room with 26 cadavers. The bodies were covered, but the concept was still mind-boggling. I was not familiar with death. I was lucky enough to live in a country (United States) where death due to war or catastrophic diseases such as polio, flu, or tuberculosis was uncommon at the time period that I was taking Anatomy. So it was shocking to me at first to see so many bodies.

Over time, during the first week in the lab, I came to understand the incredible gift the donors had given us. I put the name of my donor in the back of my Anatomy book, and I count it still as one of my treasures.

As an instructor, I am hoping that the students will come to understand that the donors truly want students to learn from them about the human body. The donor group is responsible for providing us with real information regarding how human bodies are constructed. This information has grown over the past decades of donors participating in Anatomy labs throughout the world. The understanding of the actual structures of the human body and their function is the foundation of our current healthcare system. Most importantly has been the understanding that the amazing human pattern for everyone is similar, all starting from one cell. There are variations, but fundamentally, all humans are the same in composition.

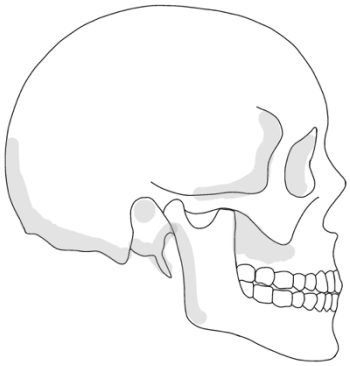
I am hoping that the students will form a partnership with their donors and learn as much as possible from them. Many of the donors purposefully made this 'stop along the end of their life's journey' to teach medical students. One reason is to provide one more gift to their loved ones; the gift of ever improving healthcare.

- Dr. Linda Callahan

B. Removal of the Calvaria

Aponeurosis: Greek apo = from, and neuron = tendon (later applied to nerve cell and its fibers), used for sheet-like tendons.

Check your Understanding: draw the layers of the scalp and the sutures of the skull.



C. Brain Meninges

Meninges: plural of Greek meninx = a membrane.

Mater: Latin = mother.

Dura mater: Latin = tough mother.

Arachnoid mater: derived from Greek arachne = spider; the suffix "-oid" = similar to.

Pia mater: Latin = tender mother.

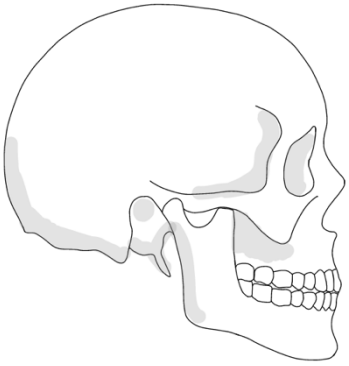
Periosteum: Greek peri = around, and osteon = bone; hence, the membrane around a bone.

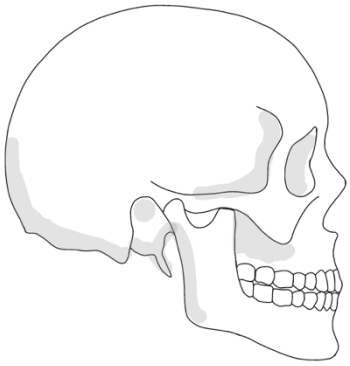
Lacunae: from Latin lacus = lake.

Sinus: Latin = a recess, bend.

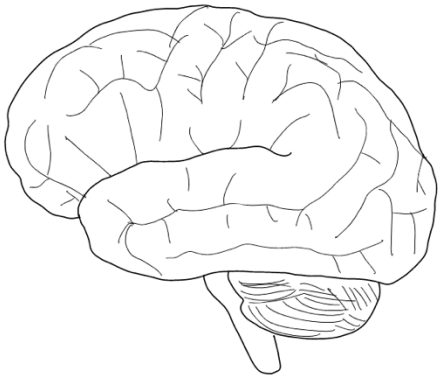
Cerebellum: diminutive of Latin cerebrum = brain.

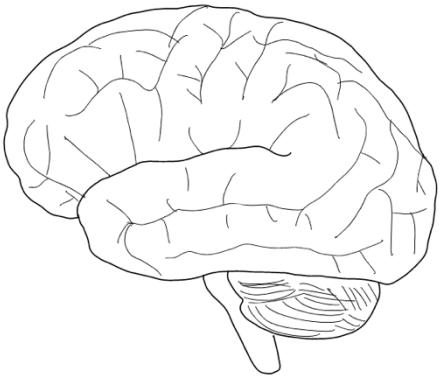
Check your Understanding: draw the blood supply to the meninges.



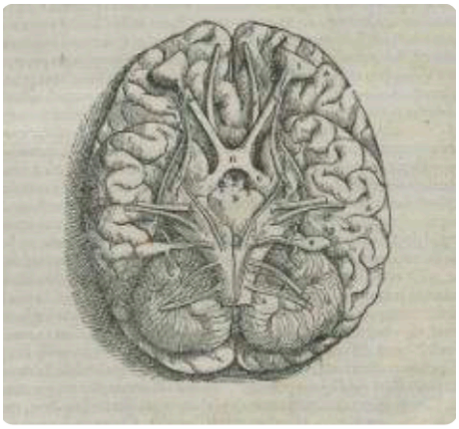


Check your Understanding: draw the dural sinuses, the ventricles and the flow of CSF.





D. Removal of the Brain

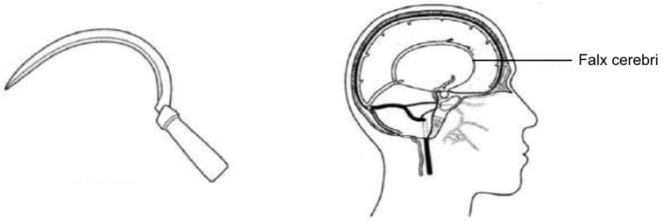


Vesalius, 1543

E. Dural Folds

Tentorium: Latin = tent.

Falx: Latin = a sickle; a curved, serrated, or smooth cutting-tool used for harvesting grain crops.



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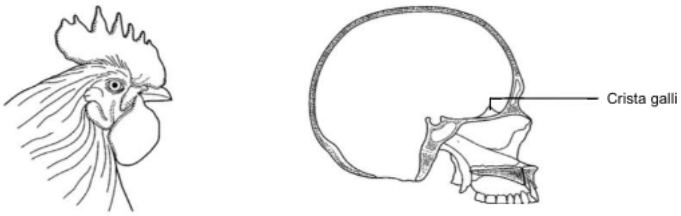
Crista galli: Latin crista = crest, and galli = of the cock; hence, a cockscomb.



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Confluens: Latin con = together, and fluens = flowing, hence the meeting of more than one stream.

F. Gross Examination of the Brain

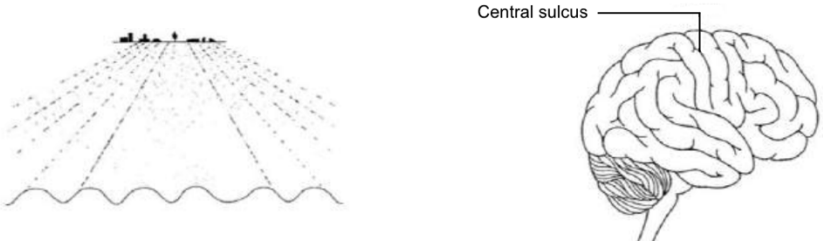
Frontal: from Latin frontis = of the forehead.

Temporal: from Latin tempus = time.

Occipital: from occiput; Latin ob = prominent, and caput = head; hence the prominent convexity of the back of the head.

Parietal: Latin parietalis, pertaining to paries = wall.

Sulcus: Latin = forrow, wrinkle; furrow made in the soil after a field has been plowed.



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Gyrus: Greek guros = a ring; hence, a coil of brain cortex.

G. Cranial Fossae

1. Anterior Fossa

Fossa: from Latin = ditch; hence, an anatomical depression.

2. Middle Fossa

Hypophyseal: Greek adjective; hypo = under, phusis = growth; hence, a undergrowth from the brain.

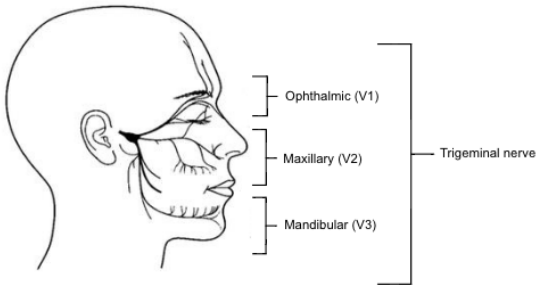
Pituitary: from Latin pituitarius = secreting phlegm; the gland was thought to produce mucous that discharged through the nose.

Cavernous: Latin = containing caverns or cave-like spaces.

Abducent: Latin abducere = leading away.

Trochlear: from Greek trochilia = a pulley.

Trigeminal: from Latin tri = three, and geminus = twin; hence, the triplets.



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Ganglion: Greek = tumor on or near sinews or tendons; used by Galen to denote complex nerve centers.

3. Posterior Fossa

Pons: Latin = bridge.

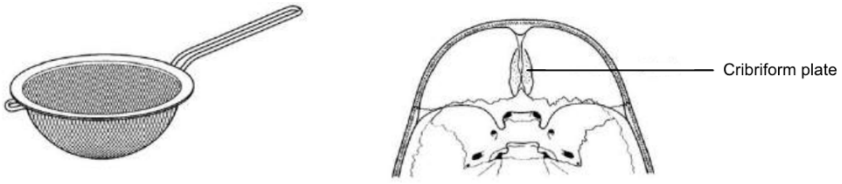
Medulla: Latin = marrow.

Jugular: from Latin jugulum = collarbone, throat.

4. Foramina

Fissure: from Latin findere = to split.

Cribriform plate: from Latin cribrum = sieve, and –iform = in the shape of.



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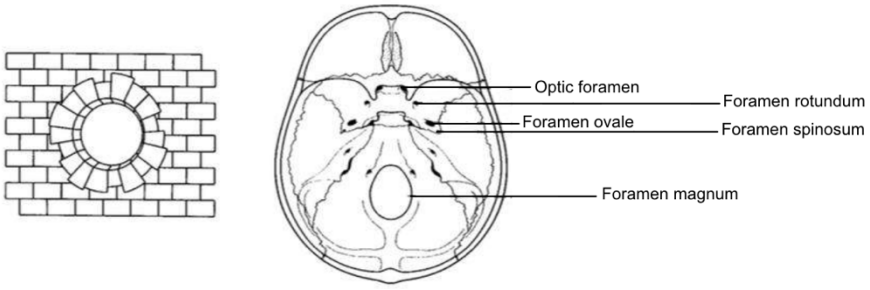
CN #	CN Name	Components	Main Actions	Clinical Tests

Foramen: from Latin forare = bore a hole.



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Rotundum: from Latin rotundus = round.

Ovale: Latin = oval opening.

Spinosum: named because of its relationship to the spinous process of the greater wing of the sphenoid bone.

Lacerum: Latin = lacerated piercing.

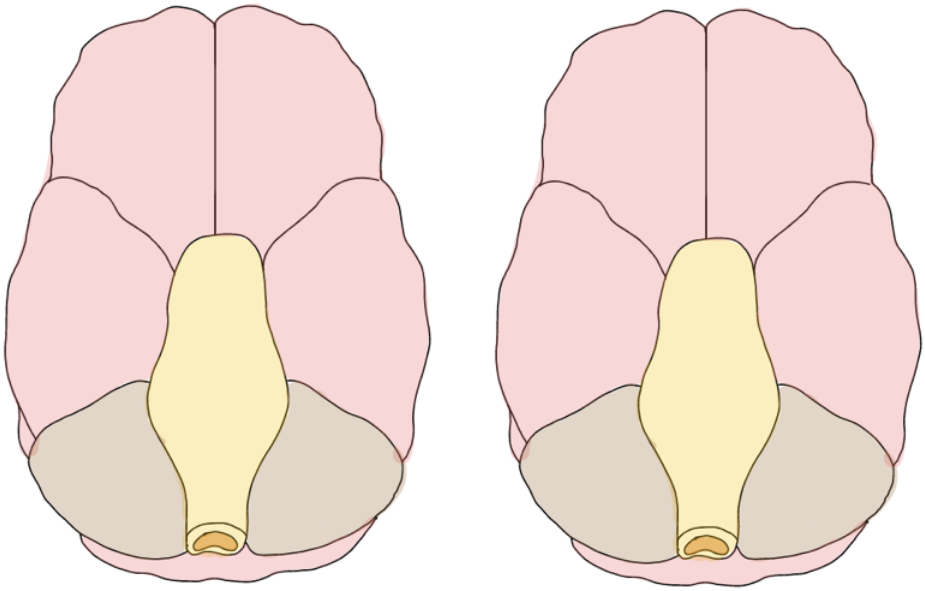
Petrosal: from Latin petrosus = stony, rocky.

Hypoglossal: Latin hypo = under, and glossa = tongue.

Magnum: Latin = great.

Medulla oblongata: Latin medulla = marrow, oblongata = oblong; literally, elongated medulla.

Check your Understanding: draw the blood supply to the brain and the cranial nerves at the base of the skull.



III. Orbit and Eye

Learning Objectives

- Take the time to step outside of yourself and recognize the reactions of those around you.
- Draw the extraocular muscles.
- Think about what it will be like to look into your patients' eyes with an ophthalmoscope.

(Technical) Manual

Step One: reflect skin flaps back to display
tendons that once moved fingers that held—what?
Did you use pen, all you had to convey
in clear lines—no mistakes? Did your jaw jut
out as you strained to put words to Step Two:
assembly required? A user guide couldn't
show just how to hold your hand to cut through
each incision marked in Step Three. I wouldn't
have guessed that I'd imagine you scrawling
how-tos with such purpose, setting down text
like you were laying down train tracks—crawling
in an orderly fashion toward the next
stop, where you'd begin Step Four: dissecting
and revising sentences—reflecting.

- Allison Shen, Class of 2019

A. Bony Landmarks

Maxillary: from Latin maxilla = jaw-bone.

Zygomatic: Greek zygon = yoke or crossbar that hitches two animals together to draw a plow; a yoke is similar in shape to the bony zygomatic arches on both sides of the skull which form the cheek bones. The same word is used in azygos, where the prefix a- means without.

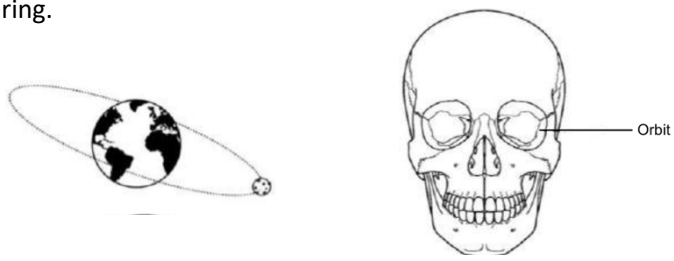
Lacrimal: from Latin lacrima = tear.

Ethmoid: from Greek ethmos = a sieve.

Sphenoid: from Greek sphen = wedge, and –eidos = shape or form.

Palatine: from Latin palatum = palate.

Orbit: from Latin orbis = ring.



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B. Right Orbit, Superior Anatomical Approach

Clinoid: from Greek kline = bed, eidos = shape or form; hence, like a bed-post.

Levator palpebrae superioris: from Latin levare = raise, lift; Latin palpebra = eyelid; Latin superus = above.

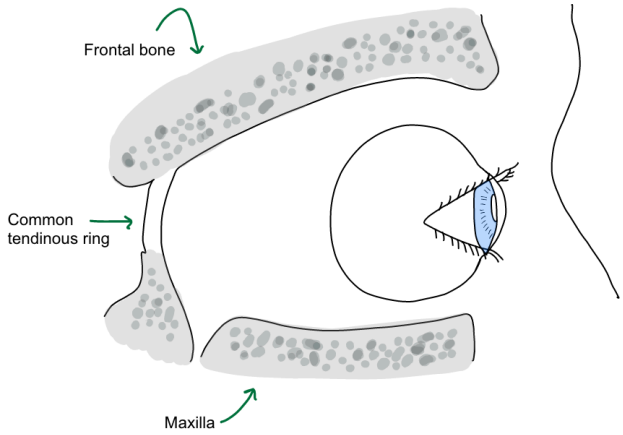
Trochlear: from Greek trochilia = a pulley.

Oblique: Latin obliquus = slanting or sloping.

Cilliary: from Latin cilium = eyelash.

Rectus: Latin = straight.

Check your Understanding: draw the extraocular muscles.



C & D. Left Orbit – Surgical Approach & Dissection of Globe

Sclera: from Greek skleros = hard.

Cornea: from Latin cornu = horn.

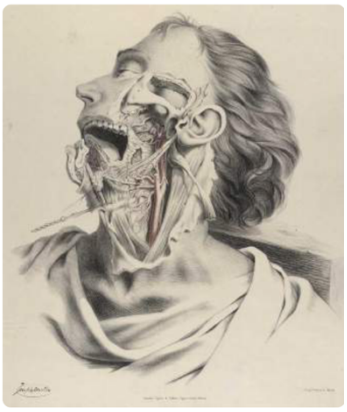
Choroid: from Greek chorion = skin, and eidos = shape or form; hence, like a membrane.

Papilla: from Latin papula = small protuberance.

Lens: from Latin lentil; named because of the similarity in shape.

Pupil: from Latin pupa = doll; named from the tiny reflected images visible in the eye.

IV. Temporal Region


Quain, 1844

Learning Objectives

- Think about the time you have spent in lab since HSF started.

A. Bony Landmarks

Temporal: from Latin tempus = time.

Styloid: Greek stylos = an instrument for writing, and eidos = shape or form; hence a pen or pencil-like structure.

Mastoid: Greek mastoeides = breast-shaped.

Meatus: Latin = passage.

Coronoid: from Greek korone = a crown, eidos = shape or form; hence, shaped like a crown.

Lingula: diminutive of Latin lingua; hence, a little tongue.

Pterygopalatine: relating to the pterygoid process and the palatine bone.

Sphenoid: from Greek sphen = wedge, and –eidos = shape or form.

B & C. Preparation of the Dissection Field & Masseter Muscle

Masseter: from Greek masasthai = to chew.

Temporalis: from Latin tempus = time.

D. Infratemporal Fossa

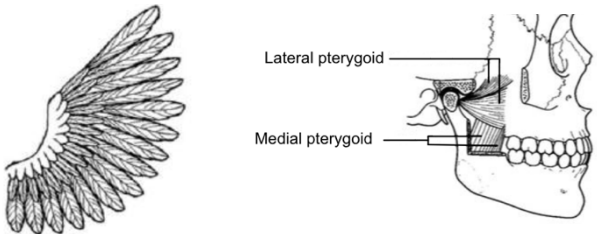
Alveolar: from Latin alveus = a small cavity.

Lingual: Latin lingua = tongue.

Chorda tympani: Latin chorda = string, tympanum = drum; named because it crosses the ear drum in the middle ear.

Auriculotemporal: of or relating to the auricle of the ear and the temple.

Pterygoid: Greek pteryx = wing, and eidos = shape or form; hence, wing or feather-shaped.



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V. Retropharyngeal Region

Learning Objectives

- Reflect on disarticulating the head.
- Think about the ethics of head transplants.

A. Introduction

"So that's the spring ligament? We're done? Like done done? This early??"

Closing my donor, as I had done at least fifty times before, it hit me. I froze. I'd sprayed the Downey solution, I was holding a wet paper towel. I couldn't bring myself to close the skin and wrap the twine, not just yet. I was thinking about my first day pep talk (you're fine, this is your new normal, please do not pass out, here we go) and the roller coaster ride that followed.

- Sara Peterson, Class of 2022

B. Bony Landmarks

Atlas (C1): named for the Atlas of Greek mythology, who was condemned to hold up the sky for eternity. Likewise, the atlas supports the globe of the head.

Axis (C2): axle or pivot; the pivot around which the first cervical vertebra, the atlas, rotates.

Dens: Latin = tooth.

Odontoid: Greek odous = tooth, and eidos = form, shape; hence, tooth-like.

Articular: from Latin articulus = small connecting part.

Condyle: from Greek kondylos = knuckle.

C. Craniovertebral Joints

Tectorial: from Latin tectorium = covering, a cover.

Cruciform: from Latin crux = cross.

Alar: from Latin ala = wing.

D & E. Disarticulation of the Head and Neck & Pre- and Lateral Vertebral Regions

Longus colli: Latin longus = long, and Latin collum = neck.

Scalenus: from Latin scalenus musculus = unequal muscle.

F. Base of the Skull.

Nodose: from Latin nodus = knot.

Laryngeal: relating to the larynx; Greek larynx = voice-box.

VI. Pharynx

Learning Objectives

- Think about why medical students at Rochester dissect donors, instead of look at prosected donors, or use visual software.

A. Introduction

I don't believe this; I think it is self involved to say that we are doing this for the greater good.

If it was just the greater good, we would cremate your brain with you body.

The professor tells me that only the bone remnants survive the fire and occupy the ash that you will become. Your brain isn't bone. So therefore it doesn't matter, anyway?

But yet, you will walk into your next life with no left eyelid, a little less adipose tissue, and no brain. Not even a right prefrontal cortex.

A dog never ceases to be a dog once it dies. It just becomes a dead dog. You were Dorris. You still are, a person. Your personhood doesn't cease with the activity of your cells.

- Anonymous, Class of 2022

B. External Pharynx

Constrictor: Latin con = together, and strictum = bound tightly; hence, producing narrowing.

Thyroid: from Greek thureoeides = shield-shaped.

Cricoid: ring-like; Greek krikos = a ring, the suffix –oid = like.

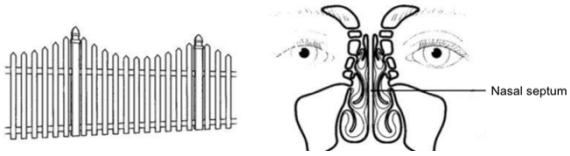
Recurrent: from Latin recurrere = running back; hence, a structure that bends and runs back toward its source.

C. Internal Pharynx

Nasal choanae: Greek choana = funnel.

Septum: Latin = a fence, or boundary wall.

Torus tubarius: Latin torus = bulge.



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Palatine: from Latin palatum = palate.

Tonsil: Latin tonsilla = tonsil.

Epiglottis: Greek epi = upon, near to, and glotta = tongue.

Piriform recess: from Latin pirum = a pear; hence, pear shaped; recess = a secluded area or pocket; hence, a small cavity set apart from a main cavity.

VII. Tongue and Nasal Cavity

Learning Objectives

- Observe the mouths of different donors.
- Think about your own eating habits.

A. Introduction

Over the past 14 weeks, while many of us derived comfort from imagining the lives our donors might have led, we ultimately understand that we will never know these 26people. We will never get to know those who gave us this incredible privilege as we took our first steps into the medical profession. No doubt, our donors collectively represent many walks of life. Beyond their names, ages, and occupations, we know little of their lives. We will never know how they spent their Saturday mornings, what hobbies filled their free time, which causes they felt passionately about, where they grew up, which loved ones' photos they carried in their wallets, whether they found faith in religion, how they spent their final days and moments.

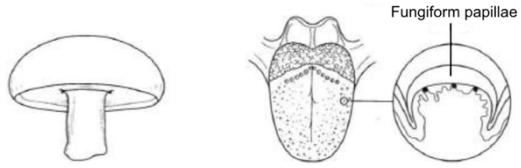
- Camille Corre, Class of 2023

B. Tongue

Sulcus terminalis: Latin = forrow, wrinkle; furrow made in the soil after a field has been plowed; terminalis = terminal, marking a boundary.

Foramen cecum: from Latin forare = bore a hole; Latin caecum = blind.

Fungiform papillae: fungiform = having the shape of or resembling a fungus or mushroom; Latin papula = small protuberance.



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Filiform papillae: filiform = threadlike; Latin papula = small protuberance.

Circumvallate papillae: Latin circum = around, and vallum = wall. Latin papula = small protuberance.

Valleculae: from Latin valles = valley.

C. Nasal Cavities

Incisive: from Latin incindere = cut into.

Lacerum: Latin = lacerated piercing

Concha: from Latin conch = shell.

Turbinate: from Latin turbin = spinning top, whirl.

Vomer: Latin = plowshare: the main cutting blade of a plow.

D. Lateral Wall of the Nasal Cavity

Meatus: Latin = passage.

Hiatus: from Latin haire = gape.

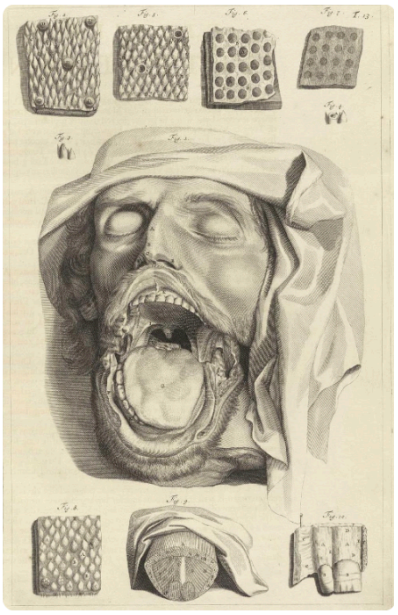
Ostium: Latin = door.

Infundibulum: Latin = funnel.

Infra-orbital: Latin infra = below, and Latin orbis = ring.

E. Pterygopalatine Ganglion

Palatine: from Latin palatum = palate.



Bidloo, 1690

Pterygoid: Greek pteryx = wing, and eidos = shape or form; hence, wing or feather-shaped

VIII. Palate, Mouth, and Nasopharyngeal Wall

Learning Objectives

- Understanding the names of muscles can help you identify them.
- Many of the muscles in this lab are named by their inferior and superior attachments.

A. Palatine Region

The following structures are named by their inferior and superior attachments:

Palatopharyngeus: relating to the palate and the pharynx.

Stylopharyngeus: relating to the styloid process and the pharynx.

Glossopharyngeal: relating to the tongue and the pharynx.

Styloglossus: relating to the styloid process and the tongue.

B. Sublingual Region

Maxilla: Latin = jaw.

Mandible: Latin mandere = to chew.

Masseter: from Greek masasthai = to chew.

Frenulum: from Latin frenum = curb.

Parotid: Greek para = bedside, and otos = of the ear; hence, beside the ear.

Plica: from Latin plicare = to fold; hence, a fold.

Sublingual: Latin sub = under or below, and lingua = tongue; hence, under the tongue.

Hamulus: from Latin hamus = hook.

Submandibular: beneath the jaw or mandible.

The following structures are named by their inferior and superior attachments:

Mylohyoid: Greek mylo = molar, and hyoeides = U-shaped.

Geniohyoid: Greek genion = chin, and hyoeides = U-shaped.

Genioglossus: Greek genion = chin, and glossa = tongue.

Hypoglossal: Greek hypo = under, and glossa = tongue.

Hyoglossus: Greek hyoeides = U-shaped, and glossa = tongue.

C. Tongue

The following structures are named by their inferior and superior attachments:

Styloglossus: relating to the styloid process and the tongue.

Palatoglossus: relating to the palate and the tongue.

Genioglossus: relating to the chin and the tongue.

D. Nasopharyngeal Wall

Palatopharyngeus: relating to the palate and the pharynx.

Buccinator: Latin = trumpeter; hence, the muscle which blows air out from the cheek under pressure.

Levator veli palatini: Latin levare = to lift, vellum = veil or curtain, and platum = the roof of the mouth; hence, the muscle that lifts the veil, or curtain, at the roof of the mouth.

Tensor veli palatini: Latin tendere = to stretch, vellum = veil or curtain, and platum = the roof of the mouth; hence, the muscle that stretches the veil, or curtain, at the roof of the mouth.

IX: Larynx

Learning Objectives

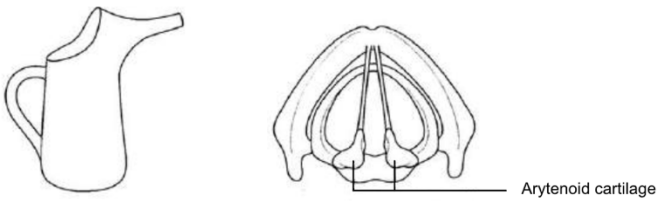
- Think about what your donor's voice was like.

A. Laryngeal Cartilages

Cricoid: ring-like; Greek krikos = a ring, the suffix –oid = like.

Thyroid: from Greek thureoeides = shield-shaped.

Arytenoid: from Greek arytaina = pitcher, and eidos = shape or form; arytenoid cartilage curves like a spout.



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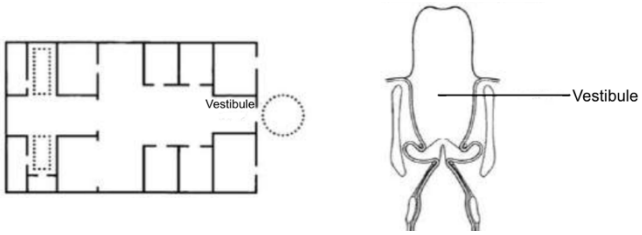
B & C. Laryngeal Muscles & Interior of the Larynx

Vestibule: a partly enclosed space in front of the entrance to a Roman house.



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Ventricle: from Latin ventriculus, diminutive of venter = belly.

Infraglottic: Latin infra = below; hence, below the glottis. Vocal: Latin vox = voice.

X. Ear

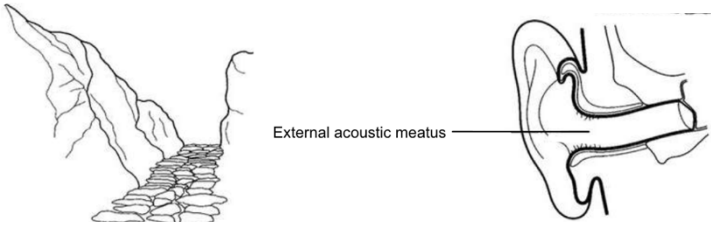
A. Introduction

Our donors gave us a gift that has been honored, respected, and consumed intellectually, emotionally, and so completely. They have taught us to "never take your experiences for granted."

- Dr. John Hansen

B. Outer Ear

Meatus: Latin = a passage or channel, or its external.



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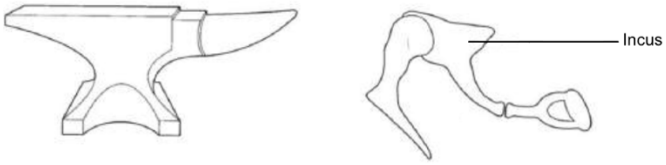
C. Middle Ear

Malleus: Latin = hammer.

Incus: Latin = anvil; hence, the anvil-shaped ossicle of the middle ear.



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Stapes: Latin = stirrup.

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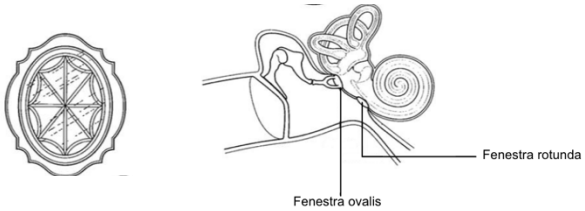
Fenestra: Latin = a window; hence, a small hole or opening in a bone.



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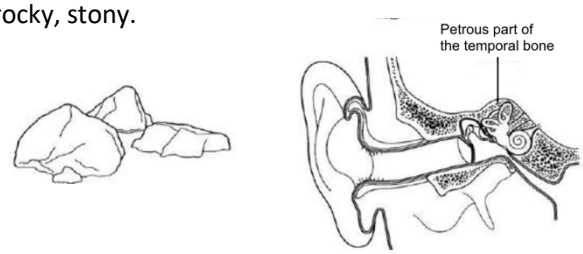
Petrous : from Latin petrosus = rocky, stony.



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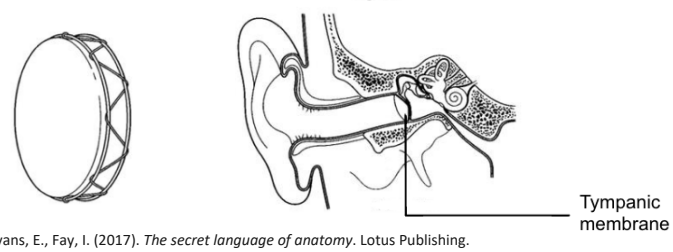
D. Inner Ear

Tympanum: Latin = a drum.



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Cochlea: from Greek kokhlias = snail; hence, a spiral shell.

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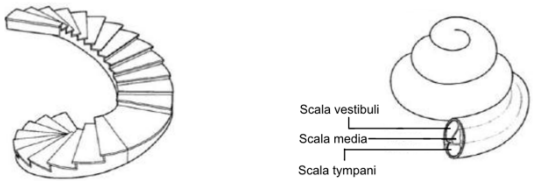
Scala: Latin = a staircase.



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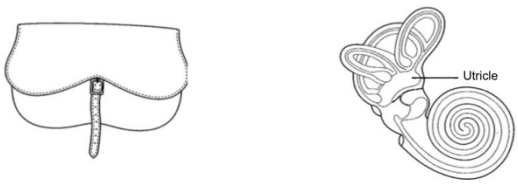
Utricle: from Latin utriculus = a small leather bag or bottle.



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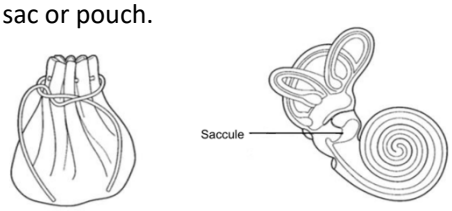
Saccule: from Latin sacculus = a small sac or pouch.



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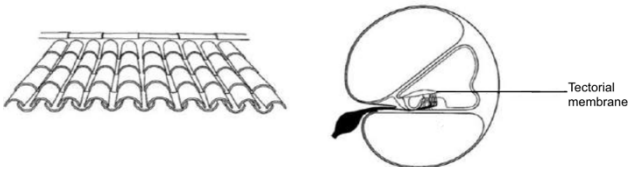
Tectorial membrane: from Latin tectum = a roof.



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Block III Bold Terms

I. Face

Frontal bone
Maxilla
Zygomatic bone
Mandible
Teeth
Lacrimal bone
Coronal suture
Parietal bones
Sagittal suture
Bregma
Occipital bone
Lambdoid sutures
External auditory meatus
Temporal bone
Zygomatic arch
Mastoid process
Styloid process
Stylomastoid foramen

II. Interior of Skull and Brain Removal

Layers of the scalp
Brain meninges
Dura mater
Periosteal (endosteal) dura
Meningeal layer
Middle meningeal artery
Superior sagittal dural sinus
Right and left transverse dural sinuses
Lacunae laterales
Arachnoid granulations
Superior sagittal sinus
Cerebellar hemispheres
Arachnoid mater
Pia mater
Dural folds
Cerebellar tentorium
Cerebellar falx
Cerebral falx
Cerebral hemispheres
Crista galli
Superior sagittal sinus
Inferior sagittal dural sinus
Straight sinus
Confluence of the sinuses
Frontal lobes
Temporal lobes
Occipital lobes
Parietal lobes
Lateral sulcus
Central sulcus
Vertebral arteries
Posterior inferior cerebellar arteries
Basilar artery
Anterior inferior cerebellar arteries
Superior cerebellar arteries
Oculomotor nerve
Posterior cerebral arteries
Posterior communicating arteries
Internal carotid arteries
Cerebral arterial circle
Middle cerebral artery
Anterior cerebral arteries
Anterior communicating artery
Twelve pairs of cranial nerves
Trochlear nerve
Cranial fossae
Anterior fossa
Sphenoid
Ethmoid
Frontal bones
Middle fossa
Temporal bones
Hypophyseal fossa
Pituitary gland
Cavernous sinus
Abducent nerve
Oculomotor nerve
Trochlear nerve
Trigeminal nerve
Internal carotid artery
Trigeminal ganglion
Divisions of cranial nerve V
- V1: ophthalmic division
- V2: maxillary division
- V3: mandibular division

Posterior fossa
Pons
Medulla
Internal acoustic meatus
Jugular foramen
Hypoglossal canal
Foramina
- Anterior cranial fossa
    - Cribriform plate
    - Olfactory nerves

- Middle cranial fossa
    - Optic canal
        - Optic nerve
        - Ophthalmic artery
        - Superior orbital fissure
        - Oculomotor nerve
        - Trochlear nerve
        - V1
        - Abducent nerve
        - Ophthalmic veins
    - Foramen rotundum
        - V2
    - Foramen ovale
        - V3
        - Lesser petrosal nerve
    - Foramen spinosum
        - Middle meningeal artery
    - Foramen lacerum
    - Carotid canal
        - Internal carotid artery and nerve plexus
- Posterior cranial fossa
    - Internal acoustic meatus
        - Facial nerve
        - Vestibulocochlear nerve
- Jugular foramen
    - Glossopharyngeal nerve
    - Vagus nerve
    - Accessory nerve
    - Inferior petrosal sinus
    - Sigmoid sinus
    - Internal jugular vein
- Hypoglossal canal
    - Hypoglossal nerve
- Foramen magnum
    - Medulla oblongata
    - Spinal roots of accessory nerve
    - Vertebral arteries

III. Orbit and Eye

Maxillary bone
Zygomatic bone
Frontal bone
Lacrimal bone
Ethmoid bone
Sphenoid bone
Palatine bone
Optic canal
Superior orbital fissure
Greater wing of sphenoid bone
Lesser wing of sphenoid bone
Inferior orbital fissure
Infra-orbital groove
Infra-orbital canal
Infra-orbital foramen
Anterior ethmoidal foramina
Posterior ethmoidal foramina
Cribriform plate
Periorbita
Frontal air sinus
Anterior and posterior ethmoid air cells
Anterior clinoid process
Levator palpebrae superioris muscle
Trochlear nerve
Superior oblique muscle
Frontal nerve
Supratrochlear nerve
Supra-orbital nerve
Lacrimal nerve
Lacrimal gland
Superior rectus muscle
Oculomotor nerve
Superior oblique muscle
Lateral rectus muscle
Abducent nerve
Nasociliary nerve
Long ciliary branches
Oculomotor nerve
Ciliary ganglion
Short ciliary nerves
Inferior rectus muscle
Inferior oblique muscle
Superior ophthalmic vein
Cavernous sinus
Ophthalmic artery
Internal carotid artery
Common tendinous ring
Sclera
Cornea
Choroid
Ciliary body
Iris
Retinal layer
Optic papilla
Lens
Pupil
Optic nerve
Lacrimal fossa

IV. Temporal Region

Temporal bone
Styloid process
Mastoid process
External acoustic meatus
Mandibular fossa
Mandible
- Head
- Neck
- Ramus
- Angle

Mandibular notch
Lingula
Mandibular foramen
Mylohyoid line
Stylomastoid foramen
Temporal fossa
Zygomatic arch
Lateral pterygoid plate of the sphenoid
Infratemporal surface of the maxilla
Pterygopalatine fossa
Lateral pterygoid plate
Greater wing of the sphenoid
Foramen ovale
Foramen spinosum
Parotid duct
Facial nerve
Masseter muscle
Temporalis muscle
Temporomandibular joint (TMJ)
Inferior alveolar nerve and artery
Mylohyoid nerve
Mental foramen
Mental nerve
Lingual nerve
Lateral pterygoid muscle
Maxillary artery
Lateral pterygoid muscle
Chorda tympani nerve
Medial pterygoid muscle
Auriculotemporal nerve
Middle meningeal artery
Articular disc

V. Retropharyngeal Region

Retropharyngeal (retrovisceral) space
Axis
Dens/odontoid process
Atlas
- Posterior arch
- Anterior arch
- Transverse process
- Superior articular facet

Occipital bone
Foramen magnum
Occipital condyles
Tectorial membrane
Cruciform ligament
Alar ligaments
Superior cervical ganglia
Longus colli muscle
Longus capitis muscle
Scalenus anterior muscle
Vertebral artery
CN IX
CN X
CN XI
CN XII
Inferior ganglion (nodose ganglion)
Superior laryngeal nerve

VI. Pharynx

Buccopharyngeal fascia
Middle constrictor
Superior constrictor
Inferior constructor
Thyroid cartilage
Cricoid cartilage
Internal laryngeal branch of superior laryngeal nerve
Thyrohyoid membrane
Recurrent laryngeal nerve
Stylopharyngeus muscle
Nasopharynx
Nasal choanae
Nasal septum
Torus tubarius
Oropharynx
Palatoglossal arch
Palatophargyngeal arch
Palatoglossus
Palatopharyngeeus
Palatine tonsil
Laryngopharynx (hypopharynx)
Epiglottis
Piriform recess
Internal laryngeal nerve
Recurrent laryngeal nerve

VII. Tongue and Nasal Cavity

Sulcus terminalis
Foramen cecum
Fungiform papillae
Filiform papillae
Circumvallate papillae
Median glosso-epiglottic fold
Valleculae
Lingual tonsils
Geniohyoid
Palatine process of maxilla
Horizontal plates of palatine bones
Incisive foramen
Greater and lesser palatine foramina
Perpendicular plate of the palatine bone
Sphenopalatine (pterygopalatine) foramen
Pterygopalatine fossa
Sphenoid sinus
Pterygoid canal
Foramen lacerum
Sphenopalatine foramen
Frontal process of the maxilla
Inferior concha (turbinate)
Middle and superior conchae
Maxillary sinus
Nasolacrimal canal
Frontal sinus
Cribriform plate
Nasal Septum

- Vomer
- Perpendicular plate of the ethmoid bone
- Septal cartilage

Nasopalatine nerve
Incisive canal
Superior conchae
Middle conchae
Inferior conchae
Auditory tube
Nasolacrimal duct
Inferior meatus
Hiatus semilunaris
Ostium for the maxillary sinus
Ethmoidal bulla
Frontal sinus
Infundibulum
Posterior ethmoid air cells
Sphenoethmoidal recess
Infra-orbital canal
Infra-orbital nerve and vessels
Greater palatine nerve
Sphenopalatine foramen
Pterygopalatine ganglion
Sphenopalatine artery
Greater palatine nerve and vessels
Nerve of the pterygoid canal

VII. Palate, Mouth, and Nasopharyngeal Wall

Palatopharyngeus muscle
Superior constrictor muscles
Stylopharyngeus muscle
Glossopharyngeal nerve
Styloglossus muscle
Maxilla Zygomatic arch
Ramus of the mandible
Coronoid process
Masseter muscle
Frenulum
Orifice of the parotid duct
Lingual frenulum
Opening of the submandibular duct
Plica sublingualis
Hamulus
Medial pterygoid plate
Mylohyoid line
Sublingual fossa
Mylohyoid muscle
Geniohyoid muscle
Genioglossus muscle
Sublingual gland
Submandibular salivary gland
Submandibular duct
Lingual nerve
Submandibular ganglion
Hypoglossal nerve
Hyoglossus muscle Lingual artery
Extrinsic tongue muscles

- Hyoglossus
- Styloglossus
- Palatoglossus
- Genioglossus

Nasopharyngeal wall
Palatoglossus muscle
Palatopharyngeus muscle
Buccinator muscle
Opening of the auditory (eustachian) tube
Levator veli palatini muscle
Tensor veli palatini muscle
Scaphoid fossa
Hamulus

Soft palate
Cricoid cartilage
Thyroid cartilage
Arytenoid cartilage
Posterior crico-arytenoid muscle
Arytenoideus
Cricothyroid muscle
Vestibule
Ventricle
Infraglottic cavity
Vestibular (false) folds
Vocal (true) folds or cords
Vocal ligament (fold)

Block III Reflections

Chapter 4

I. Face

What do you feel when you hold the skull from your bone box in your hand?

II. Interior of Skull and Brain Removal

How did it feel to view the brain being removed from the skull?

What did it feel like to hold the brain in your hands? Was it what you expected?

What do you think it will be like to do a neurological exam with your patients?

III. Orbit and Eye

Did you observe your group members during this lab?

How did you support one another through this dissection?

What will you picture when you do an eye exam with your patients?

IV. Temporal Region

How long does it feel like you have been in medical school?

How long does it feel like you've been in anatomy lab?

What makes the time go faster or slower?

How much time do you think physicians should spend with their patients?

V. Retropharyngeal Region

Think about head transplants. Who should decide if head transplants are ethical or not?

VI. Pharynx

What is the point of all of this? Do you think physicians need to dissect a donor?

What does being a doctor mean to you?

VII. Tongue and Nasal Cavity

Have your eating habits changed since you started medical school?

What are some similarities and differences that you have noticed between the mouths of different donors?

VIII. Palate, Mouth, and Nasopharyngeal Wall

Reflect on dissecting the mouth.

IX. Larynx

What do you think your donor's voice was like?

What type of family do you imagine your donor had?

What are your thoughts on patient and family centered medicine, instead of patient centered medicine?

X. Ear

Reflect on dissecting the ear.

Post-Exam Reflection:

What was the process of taking the exam like for you?

What was it like to stand beside 25 donors during the exam?

Block IV, Chapter 5

Abdomen

I. Anterior Abdominal Wall

Dissection of the human hand has often been a sensitive and challenging task for many students. The anatomy of the hand has always intrigued me. Appreciate the intricacies of its structures, its simplistic organization and how each structure contributes to the functionality of the hand. First understand the "big picture" overview and don't get lost in memorizing the details.

- Dr. Diane Piekut

A. Landmarks and Surface Anatomy

Xiphisternal junction: articulating with the xiphoid, and the sternum.

Pubic: from Latin os pubis = the bone of the pubes.

Symphysis: Greek syn = together, and physis = growth; hence, growing together, or a joint where union between the bones is by fibrocartilage.

Iliac: from Latin ilia = the bone of the flank.

Inguinal: from Latin inguen = groin.

B. Muscles of the Anterior Wall – External Oblique

Oblique: Latin obliquus = slanting or sloping.

Transversus abdominis: Latin transversus = turn across, and abdomen = the belly, the part of the trunk between the thorax and the perineum.

Dartos: Greek = flayed or skinned.

Epigastric: Greek epi = upon, and gaster = belly.

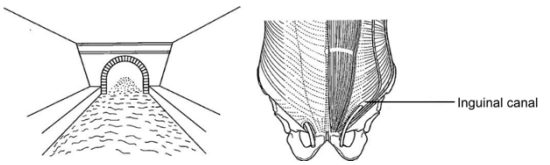
Linea alba: Latin linea = line, and alba = white.

C. Inguinal Region

Spermatic: Greek sperma = seed.

Crus: Latin = leg.

Canal: from Latin canalis = an artificial waterway.



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Intercrural: from Latin inter = between, and crus = leg; hence, between leg-like structures.

Lacunar: from Latin lacus = lake.

II. Scrotum, Spermatic Cord, and Testis

Learning Objectives

- Draw the distinguishing features of a direct and an indirect hernia.
- Draw the contributions of the anterior abdominal wall to the layers of the spermatic cord/testis.

A. Introduction

We entered the lab before the faculty finished preparing the donors for the students. As my colleague reverently thanked each donor for their gift, I could not stop my instinct to duck under the table and look up to find a face in order to meet, eye to eye. "Who are you?" I thought as I, absurdly, looked for the answer. The experience of the anatomy lab is extraordinarily personal. Invited into this space to consider the teaching and learning, I thought, "how can I help each student learn to navigate the variations of personal experiences and thrive in this environment?"

- Dr. Margie Shaw

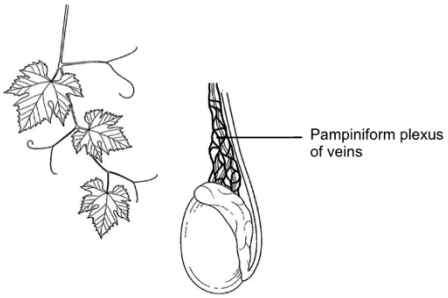
B. Scrotum and Spermatic Cord

Scrotum: from Latin scorteus = leather, a hide.

Cremaster: from Greek krema = hang or suspend.

Ductus (Vas) deferens: Latin vas = vessel, ductus = a duct, deferens = carrying down.

Pampiniform: Latin = in the shape of a young vine shoot.



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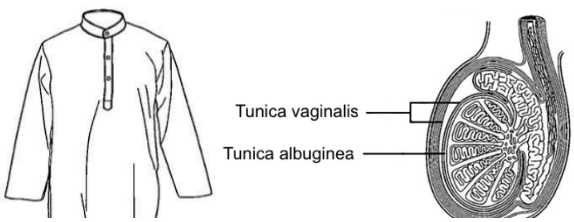
C. Testis

Testis: Latin = a witness. Under Roman law, no man could bear witness (testify) unless he possessed both testes.

Tunica albuginea: Latin tunica = a shirt or garment; Latin albus = white.



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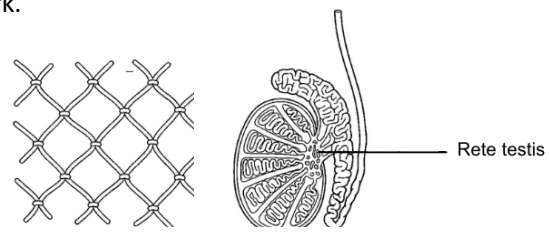
Epididymis: Greek epi = upon, and didymos = testis; hence, the organ perched posterosuperior to the testis.

Rete: Latin = a net, snare, or network.



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

D. Muscles of the Anterior Wall Continued

Rectus: Latin = straight.

Arcuate: from Latin arcuatum = curved or arched.

Check your Understanding: draw the distinguishing features of a direct and indirect hernia.

Direct | Indirect

III. Peritoneum & Peritoneal Cavity

Learning Objectives

- Reflect on dissecting the peritoneal cavity.
- Think about your own eating habits since you started medical school.

A. Orientation

Visceral: Latin viscus = internal organ.

Parietal: Latin parietalis, pertaining to paries = wall.

Peritoneum: Greek periteino = to stretch around; hence, the membrane stretched around the internal surface of the walls and the external aspect of some of the contents of the abdomen.

Mesenteries: Greek mesos = middle, and enteron = intestine; hence, the peritoneal fold which tethers the centrally situated small intestine.

Falciform ligament: from Latin falx = a sickle; a curved, serrated, or smooth cutting-tool used for harvesting grain crops.

Teres: Latin = rounded, cylindrical.

Ligament: Latin ligamentum = bandage.

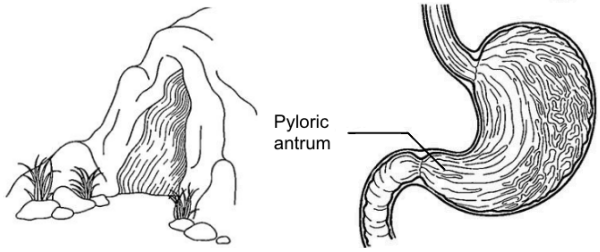
Umbilical: Latin umbilicus = navel.

B. Gastrointestinal Tract

Stomach: Greek stomachos = gullet or oesophagus; later applied to the wider part of the digestive tract, just below the diaphragm.

Fundus: Latin = bottom or base (note that the fundus of the stomach and the uterus are at the top).

Antrum: Greek antron = a cave; hence, a space in a bone or organ.



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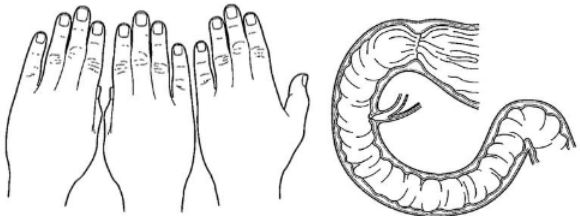
Pylorus: Greek = gate-keeper; hence, the part of the pyloric canal containing the sphincter, which guards the opening into the duodenum.

Hepatogastric: Greek, hepar = liver, and gaster = belly; hence, relating to the liver and the stomach.

Omentum: Latin = apron

Duodenum: Latin duodeni = in twelves; the length of the first portion of the small intestine is said to be equivalent to the breadth of approximately twelve fingers.



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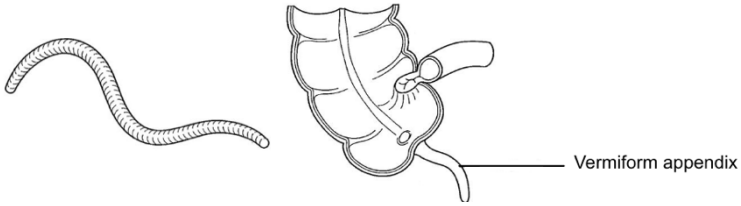
Jejunum: Latin jejunus = fasting (because it is found to be empty after death).

Ileum: Greek eilein = twisted.

Cecum: from Latin caecus = blind.

Vermiform appendix: Latin vermis = worm, forma = shape, apprendere = to hang on.



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Colon: Greek kolon = large intestine; hollow.

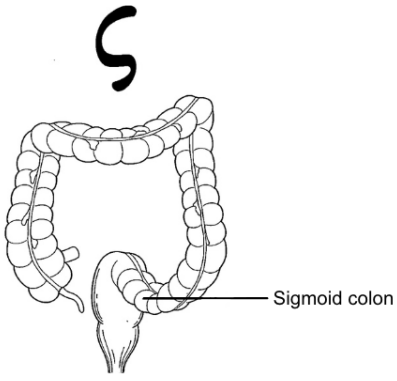
Flexure: from Latin flexura = a bending.

Phrenicolic: Greek, phren = diaphragm; kolon = large intestine, hollow.

Mesocolon: the mesentery of the colon.

Rectum: Latin = straight; the rectum was named from animals in which the rectum is straight. It is not straight in humans.

Sigmoid: lower case sigma is the 18th letter of the Greek alphabet.



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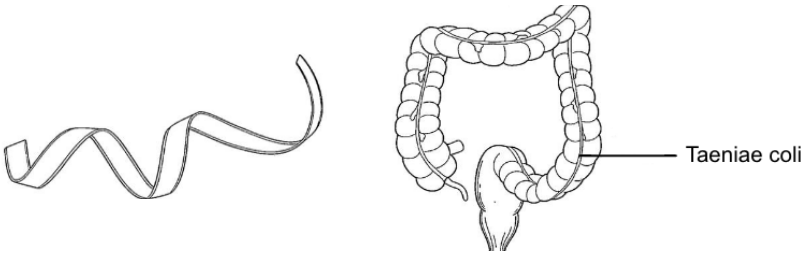
Taeniae: a tape or ribbon.



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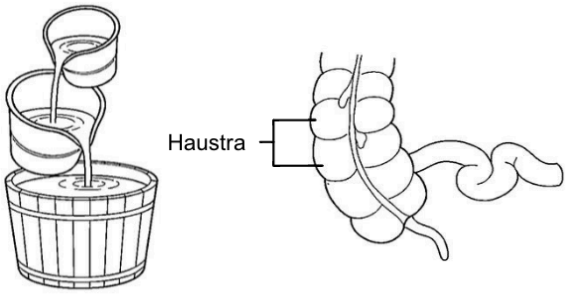
Haustra: Latin haustrum (singular) = a scoop or bucket used in drawing water, as in an irrigation system or a water pump; like the sequential filling of sacks or buckets in an ancient irrigation system, one haustrum fills, and distends. This stimulates muscles to contract, pushing the colonic contents onto the next haustrum.



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Epiploic: Greek epiploon = a net, which the greater omentum resembles with fat entangled in it.

C. Omental Bursa and Peritoneal Reflections

Bursa: Greek = a purse; hence, a flattened sac containing a film of fluid.

Pancreas: from Greek pancreas, pan = all, and kreas = flesh.

IV. Bile Passages, Celiac Trunk, and Portal Vein

Learning Objectives

- Draw the branches of the celiac trunk.
- Draw the common bile duct and its bifurcation.
- Draw the hepatic vasculature.

A. Introduction

...But when we entered anatomy lab for the first time and made the first incisions peeling back skin, tentatively removing tiny globs of fat revealing the trapezius and latissimus dorsi muscles searching for the spaghetti-like accessory nerve your body did not feel like a house— perhaps a haunted one.

- Kate Crofton, Class of 2021

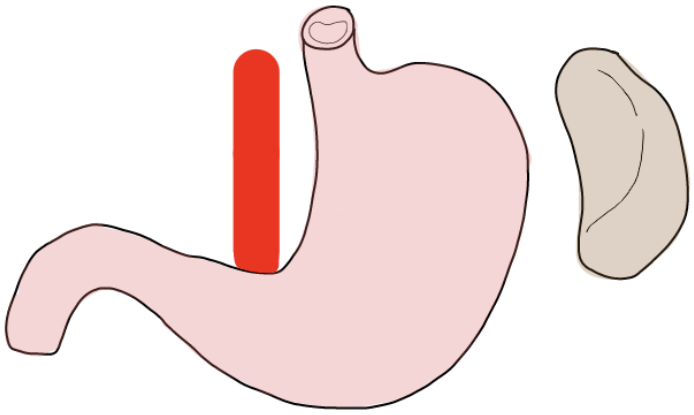
B. Common Bile Duct

Hepatoduodenal: relating to the liver and the duodenum.

Common: formed of or dividing into two or more branches.

Cystic: Latin = referring to the gallbladder.

Check your Understanding: draw the branches of the celiac trunk.



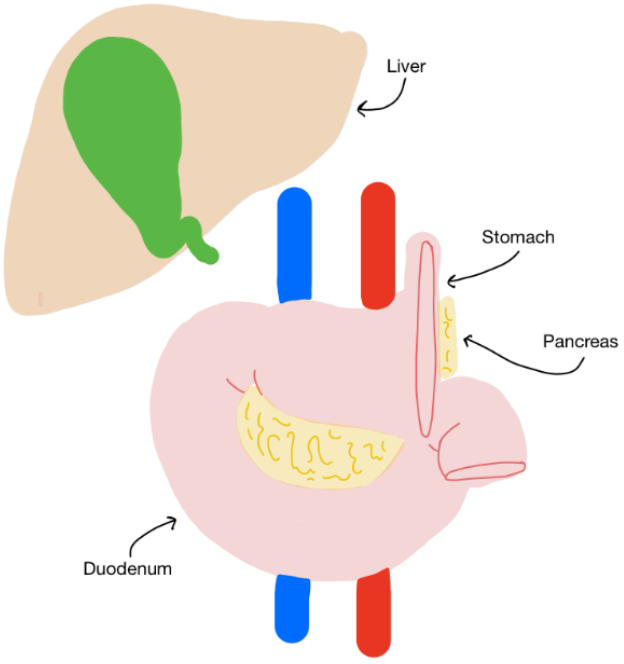
C. Hepatic Artery

Proper: from Latin proprius = one's own, particular to itself; hence, not dividing into branches.

Gastroduodenal: relating to the stomach and the duodenum.

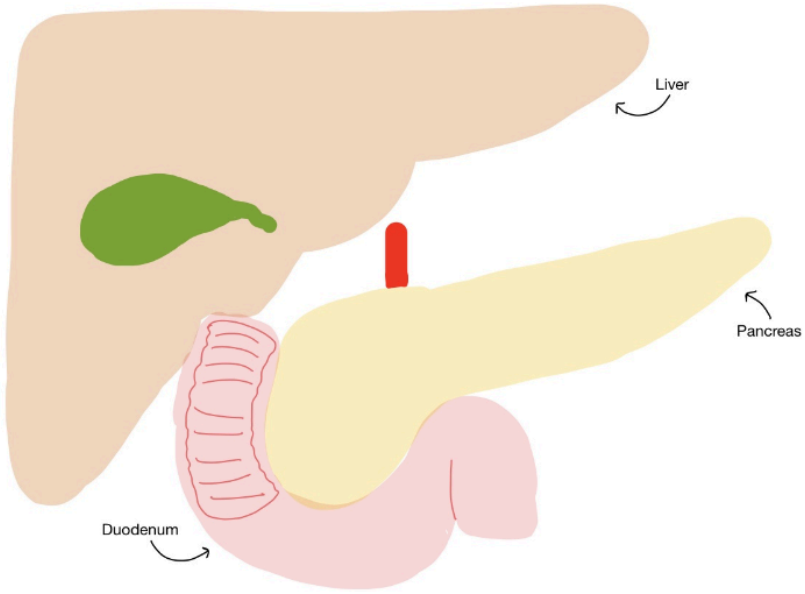
Celiac: from Greek koilia = belly.

Check your Understanding: draw the hepatic vasculature.



D & E. Portal Vein & Splenic Artery and Left Gastric Artery

Check your Understanding: draw the common bile duct.



V. Superior and Inferior Mesenteric Vessels

Learning Objectives

- Draw the branches of the abdominal aorta.
- Understand the importance of the marginal artery and how the descending colon would receive blood supply despite an occlusion of the left colic artery.

A. Introduction

> *I will never forget the feeling of the first incision, long and only somewhat straight down the center of the back. In front of us was our body of which we knew nothing. We knew neither the name nor the life, and we had only vague ideas of what we would find inside. The first cut officially marked the divide between mystery and hopeful understanding where our journey would begin. We made that first cut, and then we reflected...*
>
> - Mark Kenney, Class of 2021

B. Superior Mesenteric Artery

Arcades: from Latin arcus = bow or an arch; applied to passages formed by a succession of arches supported on piers or pillars.

Vasa recta: Latin vas = vessel (plural = vasa), recta = straight; hence, straight vessels.

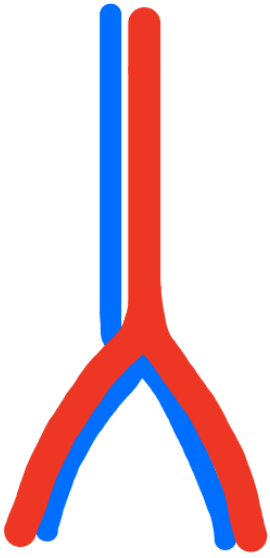
Ileocolic: relating to the ileum and the gallbladder.

C. Inferior Mesenteric Artery

Sigmoid: lower case sigma is the 18th letter of the Greek alphabet.

Marginal: Latin margin = the edge or border of a surface.

Check your Understanding: draw the branches of the abdominal aorta.



VI. Removal of the GI Tract

Learning Objectives

- Think about the experience of removing the GI tract.
- Compare and contrast your donor's GI tract with other donors' GI tracts.

A. Introduction

What I remember most clearly from my Anatomy course at URSMD 29 years ago are the ostensibly oppositional thoughts and feelings it provoked:

Being immersed for weeks in a surreal suite of formaldehyde-infused bodies; AND the graphic sensory reality of touching, severing, and smelling this real person, this real body, real tendon and heart, real eye and hand.

Feeling unworthy of this task, we who are unknowing and unskilled, entrusted without proof; AND gratitude, even giddiness, for this rare opportunity, the donor's (presumed) trust and faith and generosity, and the secure, esteemed future this experience promises.

A sense of horror and revulsion, engaging with this cold, complicated vessel, splayed open; AND one of amazement at this human body's intricacy, its elegance, its impossible and universal evolutionary miracle.

A continuous cloud of grief and despair, being elbow deep, day after day, in the visceral reality and inevitability of death, which is the fate of those we love and of every stranger, all our patients (whether on our watch or not), and ultimately, each of us; AND hope, maybe faith, that through this rite of passage, and the education and doctoring work to come, we will have the tools and the heart to ease the despair of our patients, to truly enhance their well-being, whatever their condition, even in their dying time.

- Dr. Rob Horowitz, Department of Palliative Care

B & C: Removal of the GI Tract & Detailed Examination of the Intestines

Plicae: from Latin plicare = to fold.

Cecum: from Latin caecus = blind.

Appendix: Latin apprendere = to hang on.

Haustra: Latin = saccules.

D. Unpaired Organs (Stomach, Spleen, and Liver)

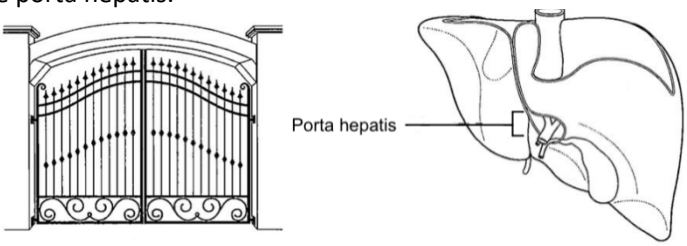
Ruga: Latin = a wrinkle.

Antrum: Greek antron = a cave; hence, a space in a bone or organ.

Sphincter: Greek sphincter = a tight binder; hence a circular muscle which closes an orifice.

Spleen: Latin spleen = the spleen.

Portal: Latin porta = a gate; also, Latin portare = to carry; hence, the portal system carries venous blood from the alimentary tract to the porta hepatis.



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Hilum: from Latin = little thing, trifle; the scar left on a seed coat by its attachment to the plant.

F. Liver

Quadrate: from Latin quadrat = made square.

Caudate: from Latin cauda = tail.

G. Gallbladder and Ducts

Papilla: from Latin papula = small protuberance.

Ampulla: a cavity, or the dilated end of a vessel, shaped like a Roman ampulla; a roughly spherical Roman flask with two handles.

Block IV Bold Terms

I. Anterior Abdominal Wall

Xiphisternal junction
Costal margin
Pubic symphysis
Pubic tubercle
Anterior superior iliac spine
Inguinal ligament
Campers' fascia
Scapras' fascia
Colles' fascia
Dartos fascia
Superficial epigastric veins
External oblique muscle
Internal oblique muscle
Transversus abdominis muscle
Rectus abdominis muscle
Linea alba
Inguinal region
Inguinal canal
Inguinal ligament
Superficial inguinal ring
Round ligament of the uterus
Labia majora
Spermatic cord
Lateral (inferior) crus of external abdominal oblique aponeurosis
Medial (superior) crus of external abdominal oblique aponeurosis
Intercrural fibers
Illio-inguinal nerve
Conjoint tendon
Lacunar ligament

II. Scrotum, Spermatic Cord, and Testis

Scrotum
Dartos muscle
External spermatic fascia
Cremasteric fascia
Internal spermatic fascia
Ductus (vas) deferens
Testicular artery
Pampiniform plexus of veins
Testis
Tunica vaginalis testis
Tunica albuginea
Epididymis:
- Head
- Body
- Tail

Internal oblique muscle
Conjoint tendon
Transversus abdominis muscle
Transversalis fascia
Inferior epigastric artery
External iliac artery
Rectus abdominis muscle
Rectus sheath
Tendinous intersections
Inferior and superior epigastric vessels
Arcuate line

III. Peritoneum and Peritoneal Cavity

Parietal peritoneum
Visceral peritoneum
Mesenteries
Falciform ligament
Ligamentum teres
Median umbilical ligament and fold
Medial umbilical ligament and fold
Lateral umbilical fold
Lesser omentum
Stomach
- Fundus
- Body
- Antrum
- Pylorus

Hepatogastric ligament
Hepatoduodenal ligament
Greater omentum
Liver
- Right lobe
- Left lobe

Gallbladder
Small intestine
- Duodenum
- Jejunum
- Ileum

Hepatoduodenal ligament
Duodenojejunal junction
Cecum
Ileocecal junction
Vermiform appendix
Meso-appendix
Ascending colon
Hepatic (right colic) flexure
Transverse colon
Splenic (left colic) flexure

Transverse mesocolon
Phrenicolic ligament
Spleen
Descending colon
Sigmoid colon
Sigmoid mesocolon
Rectum
Omental foramen
Omental bursa (lesser sac)
Pancreas
Splenorenal ligament
Gastrosplenic ligament
Coronary ligament
Hepatorenal ligament
Hepatorenal pouch

IV. Bile Passages, Celiac Trunk, and Portal Vein

Hepatoduodenal ligament
Common bile duct
Gallbladder
Cystic duct
Right hepatic duct
Left hepatic duct
Hepatic artery proper
Common hepatic artery
Gastroduodenal artery
Right gastric artery
Celiac trunk
Left hepatic artery
Right hepatic artery
Splenic vein
Splenic artery
Portal vein
Omental bursa
Gastric veins
Splenic artery
Pancreas
Left gastric artery
Right gastro-omental artery
Left gastro-omental artery
Short gastric branches

V. Superior and Inferior Mesenteric Vessels

Tail of the pancreas
Body of the pancreas
Superior mesenteric artery
Superior mesenteric vein
Intestinal arteries
Arcades
Vasa recta
Ileocolic artery
Right colic artery
Taeniae coli
Haustra
Omental (epiploic) appendices
Middle colic artery
Left colic artery
Sigmoid arteries
Superior rectal artery
Marginal artery
Straight arteries
Inferior mesenteric vein
Gastric veins

VI. Removal of the GI Tract

Jejunum
Ileum
Haustra
Plicae circulares
Cecum
Ileocecal valve
Appendix
Portal vein
Esophageal and gastric veins
Celiac trunk
Celiac ganglion
Greater splanchnic nerve
Stomach
Rugae
Pyloric antrum
Pyloric canal
Pyloric sphincter
Hilum of the spleen
Tail of pancreas
Falciform ligament
Inferior vena cava where it pierces diaphragm
Bare area of liver
Lobes of liver
- Right
- Left
- Quadrate
- Caudate

Porta hepatis
Protein vein
Hepatic ducts
Right and left hepatic arteries
Ligamentum venosum
Hepatic veins
Major duodenal papilla
Main pancreatic duct
Sphincter of hepatopancreatic ampulla

Block IV Reflections

Chapter 5

I. Anterior Abdominal Wall

What do you think it will be like to palpate your patients' abdomens?

What is your work-life balance like right now? Is there room for improvement?

What hobbies/activities have you continued during medical school? Are there any that you let go of?

Make a list of your current top 5 priorities:

Are you happy with the above list? Why or why not?

II. Scrotum, Spermatic Cord, Testis

Reflect on dissecting the GU tract.

III. Peritoneum & Peritoneal Cavity

How does your donor's peritoneal cavity compare to other donors that you have studied with?

Have your eating habits changed since you started medical school? How?

Based on the question above, are there any improvements that you can make?

IV. Bile Passages, Celiac Trunk, Portal Vein

How do you handle stress in medical school? Is this different than how you handled stress previously?

V. Superior and Inferior Mesenteric Vessels

What was your donor's aorta like?

How does your donor's vasculature differ from other donors'?

VI. Removal of the GI Tract

What was it like to remove your donor's GI tract?

What did or did you not expect about the GI tract?

Post-Exam Reflection:

What was the process of taking the exam like for you?

What was it like to stand beside 25 donors during the exam?

Block V, Chapter 6

Posterior Abdomen

I. Posterior Abdominal Structures

Learning Objectives

- Draw the features of the hilum of the kidney.

A. Introduction

The first body - big cadaver and I could not find anything. Sometimes I was desperate, because I was thinking that I would never get this anatomy. I could not eat meat for one month.

The second body - emotional, because I dissected that whole body alone from the beginning to the end; all structures were almost ideal; very little anatomical variations. I always will remember that dissection.

All the rest dissections - no emotions, just a great respect to those who donated their bodies for the anatomy labs.

- Dr. Sergiy Nadtochiy

B. Gonadal Vessels

Gonad: Greek gone = generation, seed.

Iliac: from Latin ilia = the bone of the flank.

Bidloo, 1690

C. Kidneys

Ureter: Greek oureter = passage from kidney to bladder.

Pelvis: Latin = a wide vessel, basin or bowl used for washing the hands or face.

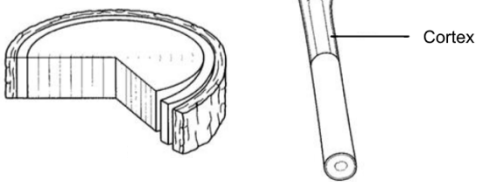
Transversus abdominis: Latin transversus = turn across, and abdomen = the belly; the part of the trunk between the thorax and the perineum.

Quadratus: from Latin quadrat = made square.

Psoas: from Greek psoa = muscles of the loins.

D. Sectioned Kidney

Cortex: Latin = bark, rind, husk, or shell.



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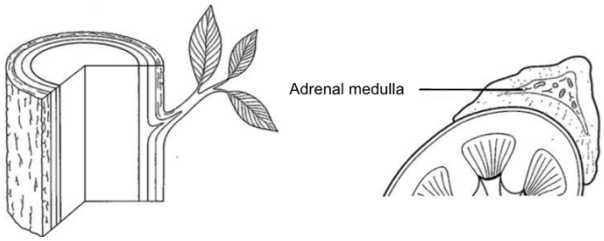
Medulla: Latin = pith, kernel, or marrow.



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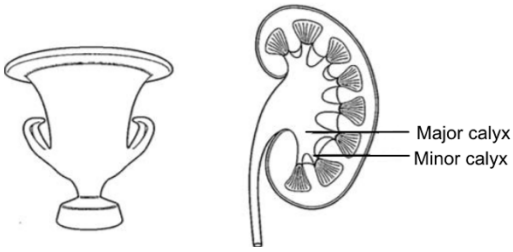
Pyramids: from Greek pyramis = pyramid shaped.

Papilla: from Latin papula = small protuberance.

Calyx: Latin = a wine cup or drinking vessel.



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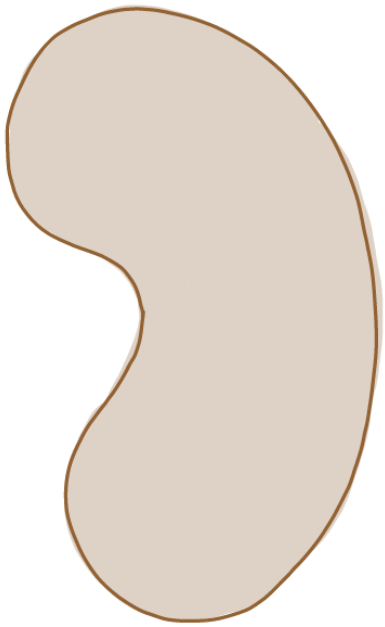
E. Adrenal Glands

Adrenal: Latin ad = towards, at, and ren = kidney; hence, situated near the kidney.

Lumbar: from Latin lumbus = the part of the back between the ribs and the hip bone.

Check your Understanding: draw the features and the hilum of the kidney.



II. Posterior Abdominal Wall

Learning Objectives

- Think about the experience of dissecting your donor and studying with other donors.
- Reflect on how the material from the anatomy lab has become relevant in ICM.

A. Muscles of the Posterior Abdominal Wall

Transversus abdominis: Latin transversus = turn across, and abdomen = the belly, the part of the trunk between the thorax and the perineum.

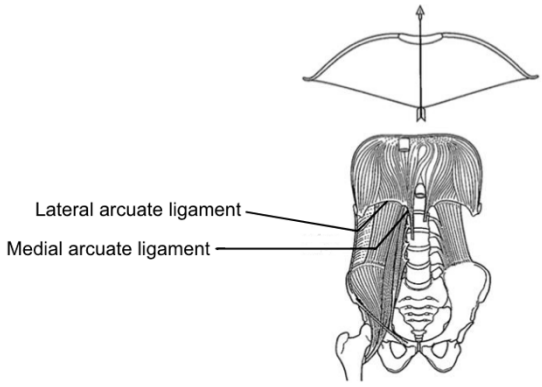
Quadratus: from Latin quadrat = made square.

Psoas: from Greek psoa = muscles of the loins.

B. Diaphragm

Crus: Latin = leg.

Arcuate: from Latin arcuatum = curved or arched.



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Vena cava: Latin vena = vein, cava = hollow; hence, hollow vein.

Hiatus: from Latin haire = gape.

Splanchnic: from Greek splanchnon = a viscus or internal organ; hence, pertaining to viscera.

Celiac: from Greek koilia = belly.

C. Nerves of the Posterior Wall (Lumbar Plexus, L1-L4)

Subcostal: Latin sub = under or below, and costal = rib; hence, below the rib.

Femoral: from Latin femur = thigh.

Obturator: Latin obturatus = stopped up; hence, a structure which closes a hole.

Sympathetic: Greek syn = together and pathos = feeling.

Block V, Chapter 7

Pelvis and Perineum

I. Pelvis

Learning Objectives

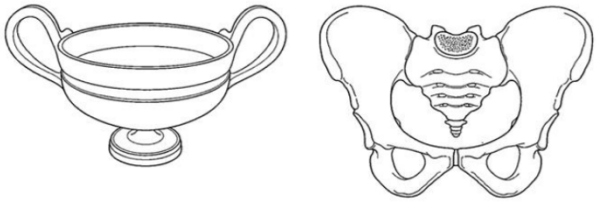
- Think about the relationship between medicine and science.

They say that home is where the heart is
but we Stryker sawed through your clavicle and ribs,
dismantled your chest walls
so that we could study the empty chambers and motionless valves
of your pulseless heart.
Some fit in one hand
like shriveled pears
but yours was hypertrophied
a ripe jumbo mango....

- Kate Crofton, Class of 2021

A. General Remarks and Definitions

Pelvis: Latin = a wide vessel, basin or bowl used for washing the hands or face.



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Obturator internus: Latin obturatus = stopped up; hence, a structure which closes a hole; internus = inward; hence, nearer the inside.

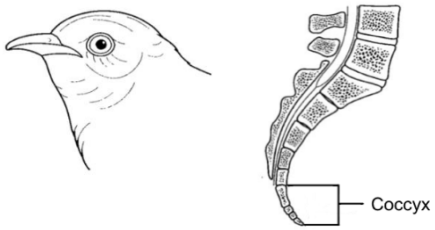
Perineum: from Greek perinaion; the caudal aspect of the trunk between the thighs, or the region of the trunk below the pelvic diaphragm.

B. Important Landmarks (Both Sexes)

Os coxae: Latin os = bone; coxa = hip; hence, the hip bone.

Sacrum: Latin os sacrum = sacred; given this name either because the sacrum was the part of an animal offered in sacrifice, or because of the belief that the soul of the man resides there. A different origin is suggested by a mistranslation of Galen, who referred to the sacrum as the “strong bone.”

Coccyx: from Greek kokkyx = cuckoo; hence, resembles a cuckoo's bill.



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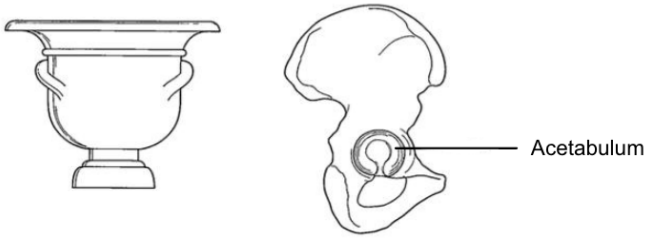
Ilium: from Latin ilia = the bone of the flank.

Ischium: Greek ischion = socket; named because the ischium contributes more to the acetabulum than the ilum and pubis.

Acetabulum: Latin acetum = vinegar (acetic), and abulum = small receptable; hence, a vinegar cup.



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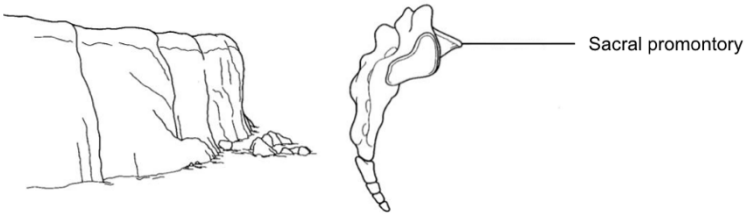
Sciatic: Greek Iskhiadikos = relating to the hips.

The following structures are named by their inferior and superior attachments:

Sacrospinous: relating to the sacrum and the spine of the ischium.

Sacrotuberous: relating to the sacrum and the tuberosity of the ischium.

Promontory: from Latin promontorium = a headland; part of land jutting into the sea; used for bony prominence.



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

C. Observations of the Female Lesser Pelvis (True Pelvis)

Umbilical: Latin umbilicus = navel.

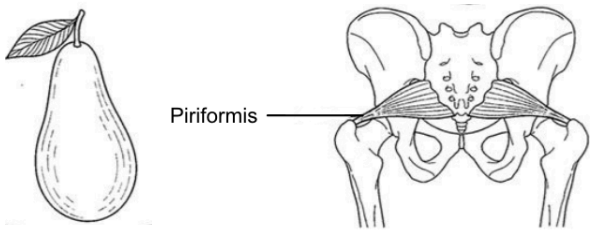
Uterus: Latin = womb.

Vesicula: from Latin vesica = bladder.

Mesosalpinx: Greek mesos = middle, and salpinx = an ancient Greek trumpet.

Levator ani: Latin levare = to lift; Latin anus = ring; hence, the muscle that lifts the ring.

Piriformis: Latin pirum = a pear; hence, pear-shaped.



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D. Observations of the Male Pelvis Minor (True Pelvis)

Ureter: Greek oureter = passage from kidney to bladder.

Ductus (Vas) deferens: Latin vas = vessel, ductus = a duct, deferens = carrying down.

Seminal: from Latin semen = seed.

Prostate: Greek pro = before, and statos = standing; hence, one that stands before; the prostate stands before the urinary bladder.

II. Transection of Abdomen and Splitting of Pelvis

Learning Objectives

- Think about what it will feel like to split the pelvis in half.
- Reflect on how you view the donors when they are split.

Well before I stepped into the anatomy lab for the first time, my imagination was on overdrive. Weeks before the class started, I began dreaming about the lab. What would it be like, I wondered? Would attending calling hours with an open casket prepare me? What about looking at historical anatomical atlases? As it turned out, the experience that helped me most was serving as a hospital chaplain, accompanying family members to the morgue. As an infrequent visitor to the morgue, I could appreciate their discomfort, but my discomfort had no place in the presence of their grief. Helping others navigate this space, being present for them, helped me then, and again later in the anatomy lab.

- Susan Daiss

B. & C. Transection of Abdomen and Split Pelvis in the Female & Male

Rectum: Latin = straight; the rectum was named from animals in which the rectum is straight. It is not straight in humans.

Urethra: Greek ourethra = passage from bladder to exterior.

Sphincter: Greek sphincter = a tight binder; hence a circular muscle which closes an orifice.

Trigone: Latin trigonum = a triangle.

Orifice: Latin orificium = opening.

Detrusor: Latin detrus = thrust down.

Fornix: Latin = arch, vaulted chamber.

Cervix: Latin = neck.

Fundus: Latin = bottom or base (note that the fundus of the stomach and the uterus are at the top).

III. Urogenital Triangle

Learning Objectives

- Think about how you view the donors after the pelvis was split.
- Reflect on the bag of organs that you still have at your table.

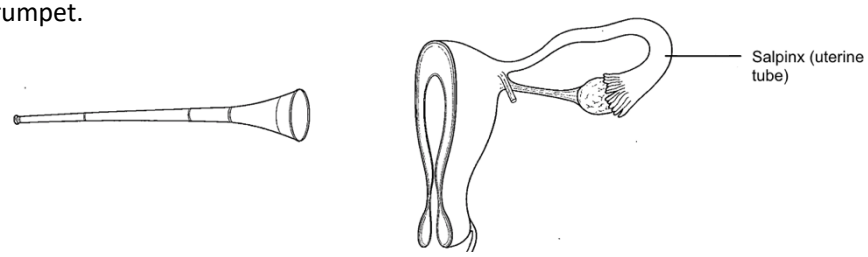
I hold you. I trace your triceps in my fingers. I cup your cheek in my palm. I stroke your nerves. You gifted me the knowledge of your body. Intimate knowledge. A knowing of you that you might not even have had yourself. You've gifted me a piece of your humanness, of your personhood, of your very being that I've swallowed with the particles of formaldehyde, absorbed through the slickness that moisturizes my gloves. You will always live on inside me. You live in me until I die, and until those I touch die. You're a part of my healing touch now. You taught me to be gentle. To cut with precision and to inflict only the necessary change to reveal your flowing, interconnected structures. You've given me your body, and knowledge, and now, I'm realizing, a bit of your wisdom.

- Anonymous, Class of 2022

A. Female Perineum

Labium: Latin = lip. Vestibule: a partly enclosed space in front of the entrance to a Roman house.

Salpinx: an Ancient Greek trumpet.



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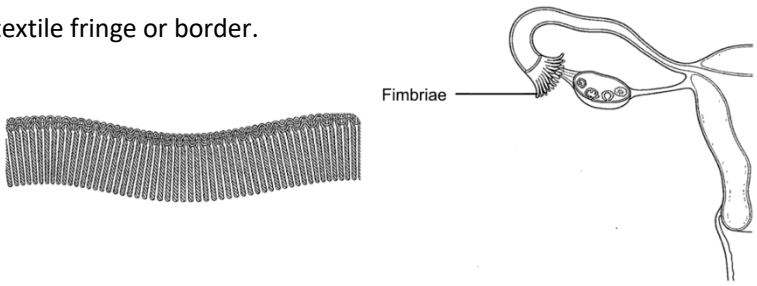
Fimbria: Latin = a textile fringe or border.



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Mons: Latin = a hill or mountain.

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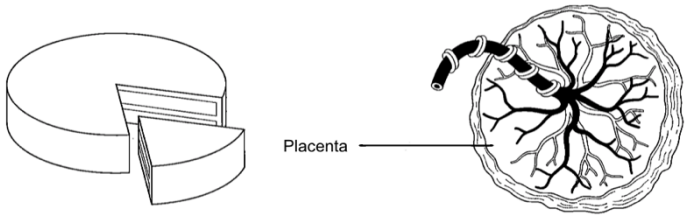
Placenta: Latin = a kind of flat cake.



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Ostium: Latin = a door, the entrance of a house, an opening.

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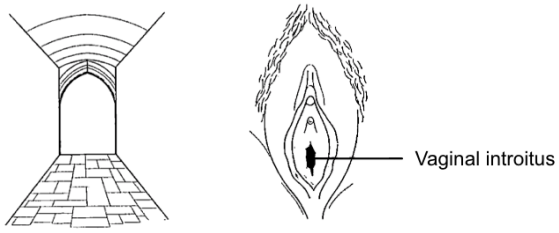
Introitus: Latin = an entrance or passage, or a "going in."



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B. Muscles

Pudendal: Latin pudendus = shameful; hence, pertaining to the external genitalia.

C. Male Perineum

Corpus cavernosa: Latin corpus = body, and cavernous = containing caverns or cave-like spaces.

Corpus spongiusum: Greek spongia = a sponge.

Glans: Latin = acorn.

Block V, Chapter 8

Lower Limb

I. Anterior and Medial Thigh

Learning Objectives

- Draw the musculature of the thigh.
- Draw the blood supply and innervation to the thigh.

A. Introduction

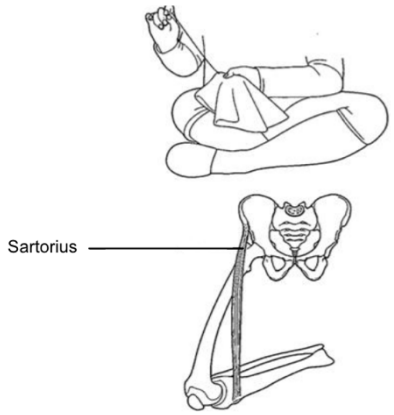
Having now gone through all of first year, I am finding that anatomy lab is a learning experience unlike any other we are likely to have for the rest of our careers. It started out, for me, as something that I had to do; now looking back I'm appreciating it as an something that I got to do. I have even been looking for ways to get myself back in the lab to learn more from the donors while I still have the opportunity to do so. I think anatomy lab also helped me begin to understand how to be humble in front of a patient who is as vulnerable and exposed as anyone could ever be: dead, naked, and being systematically dissected piece by piece. The intensity with which I remember things about my time in anatomy lab will, I think, make the lessons stick with me for the rest of my career, and I am very grateful for this learning experience.

- Michelle Prong, Class of 2021

B. Femoral Triangle and Sheath

Femoral: from Latin femur = thigh.

Sartorius: Latin sartor = a tailor; action enables the cross-legged position that is traditionally adopted by tailors.



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Saphenous: Greek saphenes = manifest, visible.

C. Anterior Thigh

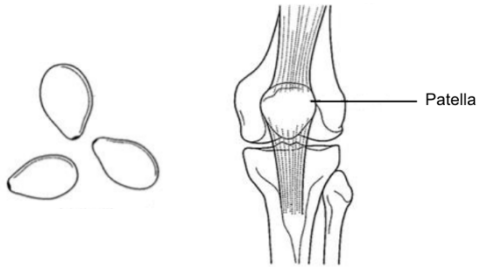
Tuberosity: from Latin tuber = a swelling or lump, usually bony.

Trochanter: Green = a runner; hence, the bony landmark, the greater trochanter, which moves prominently in running.

Condyle: Greek kondylos = knuckle; prominence on the part of the humerus that looks like a knuckle.

Patella: Latin = small pan.

Sesamoid: Greek = shaped like a sesame seed; hence, small bone in tendon at site of friction.



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Linea aspera: Latin linea = line, and aspera = rough; hence, a rough line.

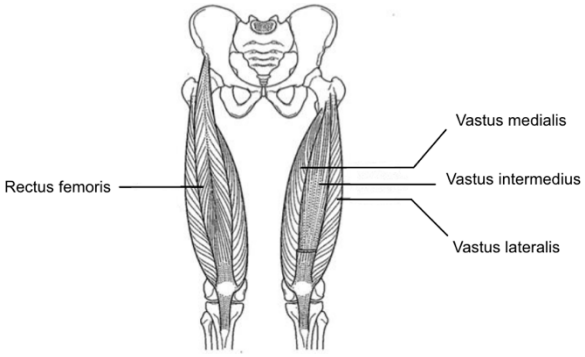
Circumflex: Latin circum = around, and flexere = to bend; hence, bent or bend around.

Popliteal: Latin poples = the ham of the leg, or the thigh, and sometimes, the knee.

Fascia lata: Latin fascia = band, door frame; hence the fibrous wrapping of muscles, and

Latin latus = side.

Quadriceps: Latin quad = four, and caput = head; hence, four-headed.



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Vastus: Latin = great, vast, extensive.

D. Medial Thigh

Pectineus: Latin pectin = a comb; hence, the muscle attaching to the pectineal line of the pubic bone.

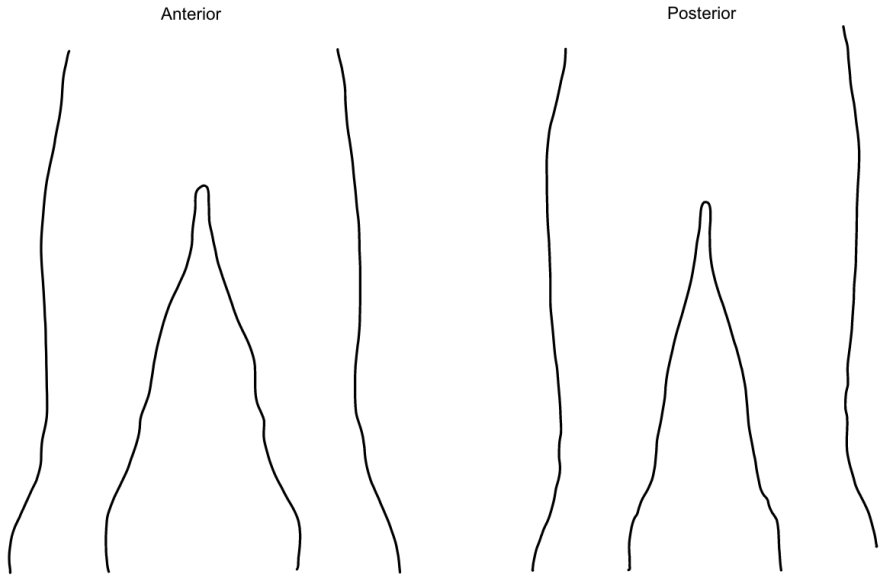
Gracilis: Latin = slender.

Profunda: Latin = deep.

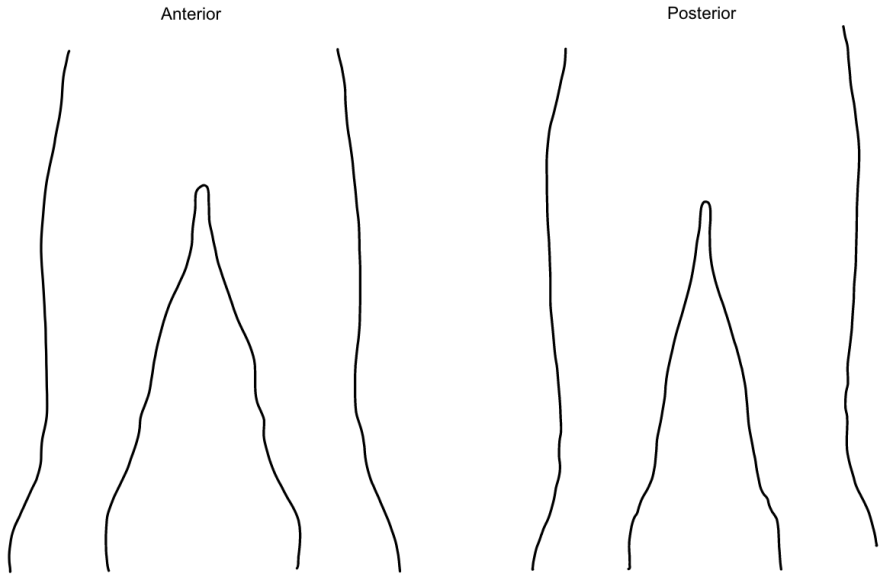
Obturator: Latin obturatus = stopped up; hence, a structure which closes a hole.

Hiatus: from Latin haire = gap.

Check your Understanding: draw the musculature of the thigh.



Check your Understanding: draw the blood supply and the innervation of the thigh.



II. Gluteal Region and Posterior Thigh

A. Bony Features

Sciatic: Greek Iskhiadikos = relating to the hips.

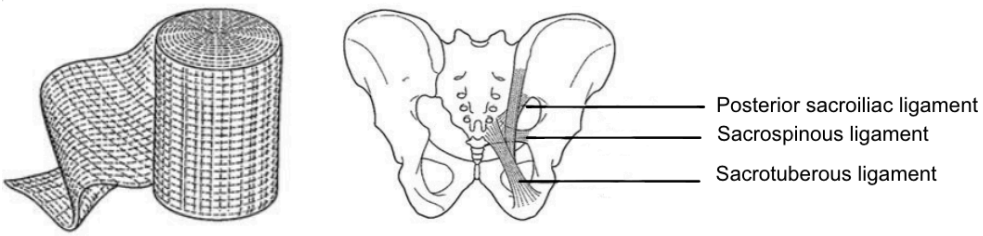
Ischial: Greek ischion = socket; named because the ischium contributes more to the acetabulum than the ileum or pubis.

B. Gluteus Maximus

Gluteus: Greek gloutos = rump or buttock

Bursa: Greek = a purse; hence, a flattened sac containing a film of fluid.

Ligament: Latin ligamentum = bandage.



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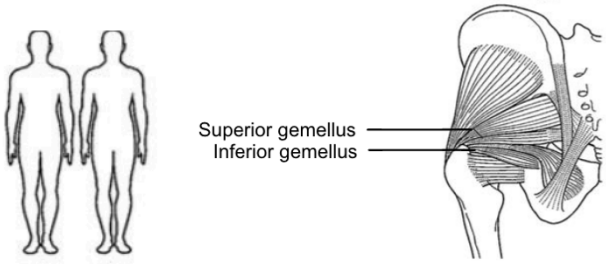
C. Deep Structures

Piriformis: Latin pirum = a pear; hence, pear-shaped

Pudendal: Latin pudendus = shameful; hence, pertaining to the external genitalia.

Gemellus: Latin geminus = twins; used for small paired objects.



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III. Popliteal Fossa and Leg

Learning Objectives

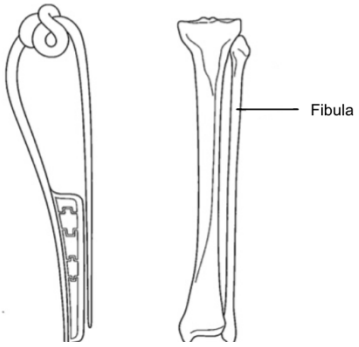
- Draw the musculature of the leg.
- Draw the blood supply and innervation of the leg.
- Draw the contents of the medial and lateral ankle.

A. Popliteal Fossa

Saphenous: Greek saphenes = manifest, visible.

Sural: Latin sura = the calf.

Fibula: Latin = brooch or clasp.



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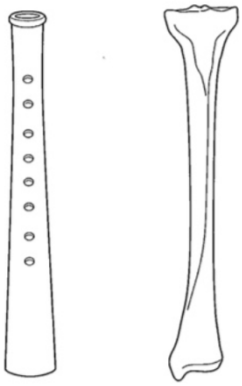
Tibia: Latin = a flute or pipe



Brasset, C., Evans, E., Fay, I. (2017). *The secret language of anatomy*. Lotus Publishing.

Genicular: Latin geniculare = to flex the knee; hence, a bent knee.

B. Posterior Leg and Medial Ankle

Gastrocnemius: Greek gaster = belly, and kneme = leg; hence, the bulging muscle of the calf.

Soleus: Latin solea = sole or the bottom, ground, foundation, or lowest point of a structure; named for its flatness.

Plantaris: Latin planta = the sole of the foot.

Calcaneal: Latin calx = heel; hence, the bone of the heel.

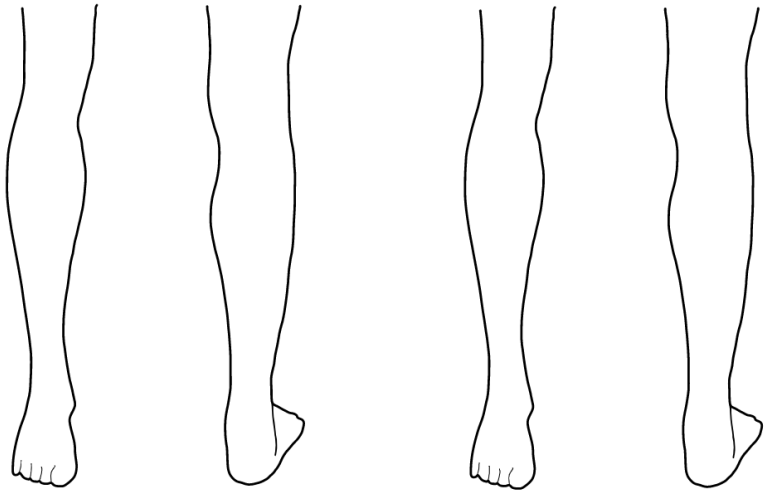
Achilles Tendon: In 1639, Flemish/Dutch anatomist Philip Vereyen described the tendon's location based on the mythological account of Achilles. As a child, Achilles was dipped into the River Styx by his mother in order to render his body invulnerable. However, the heel from which he was held did not touch the water, and was his one vulnerable spot. He later died by a poison dart to the heel.

Hallucis: from Latin haliex = great toe; hence, of the great toe.

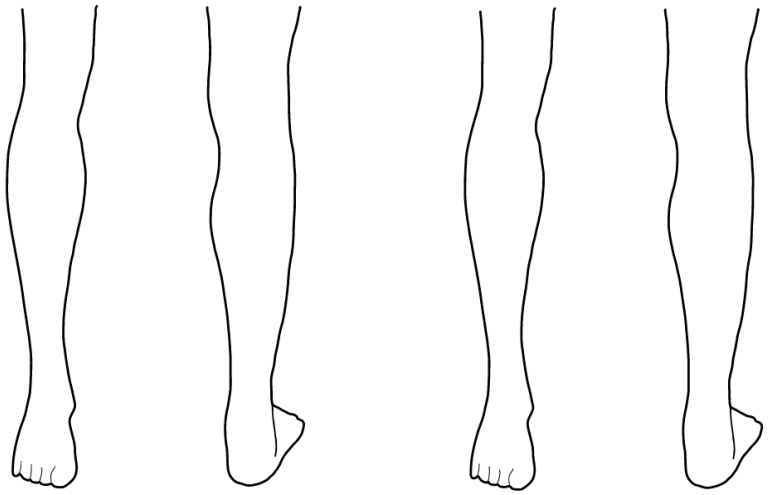
Popliteus: Latin poples = the ham of the leg, or the thigh, and sometimes, the knee.

Sustentaculum tali: Latin = a support, which sustains; hence, the ledge on the calcaneus supporting part of the talus.

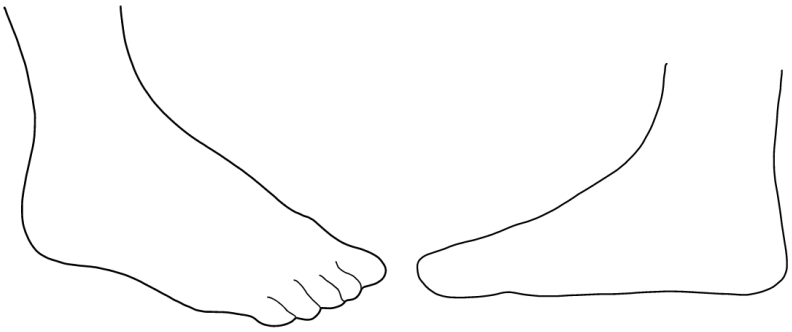
Check your Understanding: draw the musculature of the leg.



Check your Understanding: draw the blood supply and innervation of the leg.



Check your Understanding: draw the contents of the medial and lateral ankle.



C. Anterior Leg and Dorsal Foot

Condyle: Greek kondylos = knuckle; prominence that looks like a knuckle.

Malleolus: from Latin malleus = hammer.

Tarsal: Greek tarsos = a flat surface; hence, the flat part of the foot.

Talus: Latin = ankle-bone; hence, the tortoise-shaped tarsal of the talocrural (ankle) joint.

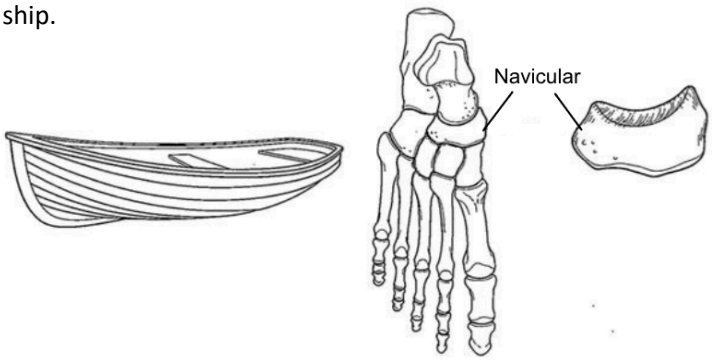
Calcaneus: Latin calx = heel; hence, the bone of the heel.

Cuboid: Greek kuboides = cube-shaped.

Phalanges: from Latin phalanx = row of soldiers.

Pedis: Latin = the foot.

Navicular: Latin navis = ship.



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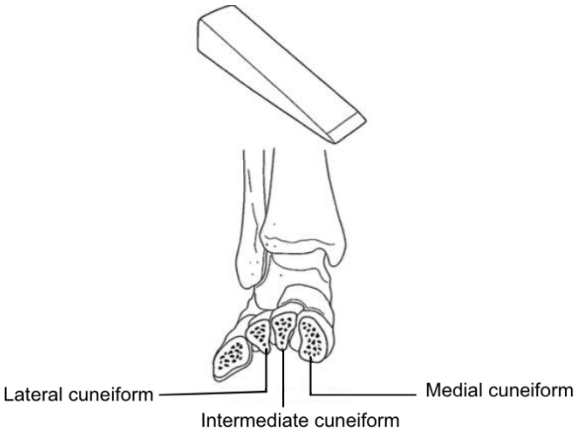
Cuneiform: Latin cuneus = wedge; hence, wedge-shaped.



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Check your Understanding: draw the musculature and bony structures of the foot.

IV. Sole of the Foot

Learning Objectives

- Draw the contents of the sole of the foot.

A & B. Introduction & First Layer

Plantar: Latin planta = the sole of the foot.

Digiti: Latin digitus = a finger or toe.

C. Second Layer

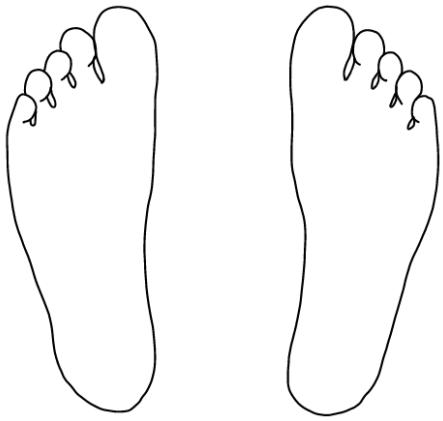
Lumbrical: Latin lumbricus = worm; hence, worm-shaped muscles.

D. Third Layer

Hallucis: from Latin haliex = great toe; hence, of the great toe.

E. Fourth Layer

Check your Understanding: draw the contents of the sole of the foot.



V. Joints of Lower Limb

Learning Objectives

- Write down experiences from lab, and characteristics of your donor that you would like to remember.

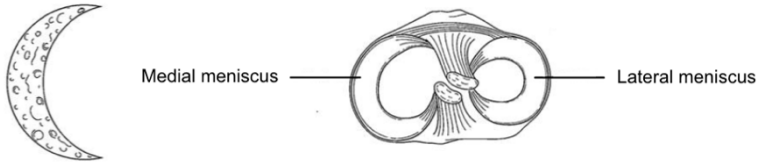
A & B. Hip Joint & Knee Joint

Collateral: Latin con = together, and latus = side, hence, alongside.

Suprapatellar: Latin supra = superior to; hence, superior to the patella.

Cruciate: from Latin crux = cross.

Meniscus: Latin = small moon; hence, a crescent-shaped structure.



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C. Ankle Joint

Deltoid: upper case delta is the 4th letter of the Greek alphabet.

The following structures are named by their inferior and superior attachments:

Calcaneofibular: relating to the calcaneus and the fibula.

Talofibular: relating to the talus and the fibula.

Calcaneonavicular: relating to the calcaneus and the navicular bone.

Block V Bold Terms

I. Posterior Abdominal Structures

Gonadal arteries
Left gonadal (testicular or ovarian vein)
Left renal vein
Right gonadal vein
IVC
External iliac vessels
Ureters
Kidneys
Left renal artery
Renal pelvis
Transversus abdominis muscle
Quadratus lumborum muscle
Psoas major muscle
Renal cortex
Renal medulla
Renal pyramids
- columns
- papillae

Minor and major calyces
Renal pelvis
Right adrenal gland
Left adrenal gland
Abdominal aorta
Lumbar arteries

II. Posterior Abdominal Wall

Psoas major
Iliacus
Quadratus lumborum
Transversus abdominis
Right and left crus
Arcuate ligaments
Median arcuate ligament
Lateral arcuate ligament
Central tendon
Vena caval foramen
Esophageal hiatus
Aortic hiatus
Greater splanchnic nerves
Celiac ganglion
Lumbar plexus
Subcostal nerve
Iliohypogastric nerve
Ilio-inguinal nerve
Genitofemoral nerve
Lateral cutaneous nerve of the thigh
Femoral nerve
Obturator nerve
Lumbosacral trunk
Sympathetic trunk

III. Pelvis

Greater (false) pelvis
Lesser (true) pelvis
Obturator internus
Pelvic diaphragm
Anal triangle
Urogenital triangle
Perineum
Os coxae
Sacrum
- promontory

Coccyx
Acetabulum
Sacral canal
Anterior and posterior sacral foramina
Pelvic brim
Obturator foramen
Ischial tuberosity
Ischial spine
Pubic arch
Sacrospinous ligament
Sacrotuberous ligament
Lesser sciatic foramen
Greater sciatic foramen
Median umbilical ligament
Medial umbilical ligament
Ovarian blood vessels
Ureter
External iliac vessels
Vesicle-uterine pouch
Recto-uterine pouch
Broad ligament
Uterine tube
Mesovarium
Mesosalpinx
Suspensory ligament of the ovary
Recto-uterine folds
Uterosacral ligaments
Transverse cervical ligaments
Pubocervical ligaments
Levator ani muscle
Obturator internus muscle
Coccygeus muscle
Piriformis muscle
Pelvic splanchinic nerves

Common iliac arteries
Ductus deferens
Rectovesicular pouch
Seminal vesicles
Prostate gland

IV. Transection of Abdomen and Splitting of Pelvis

Right common iliac vessels
Rectum
Superior rectal artery
Middle rectal arteries
Urethra
External sphincter
Urethrae muscle
Trigone
Two ureteral orifices
Urethral orifice
Detrusor muscle
External os
Posterior and anterior fornices
Vagina
Internal ostium (os)
Body of the uterus
Cervix
Fundus
Ovarian
ligament
Transverse cervical ligaments
Internal iliac artery
Umbilical branch
Vesicular branch
Uterine branch
Middle rectal branch
Obturator
Internal pudendal
Superior and inferior gluteal arteries
Greater sciatic foramen
Obturator artery
Obturator nerve
Second, third, and fourth sacral nerves
Levator ani muscle
Coccygeus muscle
Obturator internus muscle
Piriformis muscle
Seminal vesicles
Ureter
Prostatic urethra
Membranous urethra
Spongy urethra
External sphincter muscle
Prostate gland
Deep dorsal vein of the penis
Prostatic plexus of veins

V. Urogenital Triangle

Labium majora
Labium minora
Vestibule
Bulbospongiosus muscle
Bulb of the vestibule
Ischiocavernosus muscle
Crus of the clitoris
Body of the clitoris
Glans of the clitoris
Pudendal nerve
Internal pudendal artery
Bulb of the penis
Crus of the penis
Corpus cavernosa of the penis
Corpus spongiosum of the penis
Glans of the penis

VI. Anterior and Medial Thigh

Tensor fasciae latae muscle
Great saphenous veins
Saphenous nerve
Femoral triangle
Inguinal ligament
Sartorius muscle
Adductor longus muscle
Great saphenous vein
Femoral vein
Valves of the great saphenous vein
Femoral canal
Anterior superior iliac spine
Anterior inferior iliac spine
Pubic tubercle
Greater trochanter of the femur
Lesser trochanter of the femur
Lateral condyle and epicondyle of the femur
Medial condyle and epicondyle of the femur
Adductor tubercle
Linea aspera
Patella
Tibial tuberosity of tibia
Femoral artery
Femoral vein
Profunda femoris artery
Lateral and medial femoral circumflex arteries

Femoral nerve
Sartorius muscle
Rectus femoris muscle
Adductor canal
Saphenous nerve
Adductor hiatus
Popliteal vessels
Fascia lata
Iliotibial tract
Tensor fasciae latae muscle
Quadriceps femoris
Vastus lateralis
Vastus medialis
Vastus intermedius
Rectus femoris
Quadriceps tendon
Tibial tuberosity
Patellar ligament
Sartorius
Rectus femoris
Pectineus muscle
Adductor longus
Gracilis muscle
Linea aspera of the femur
Profunda femoral vessels
Adductor brevis
Obturator nerve
Adductor magnus
Adductor hiatus

VII. Gluteal Region and Posterior Thigh

Greater sciatic notch
Lesser sciatic notch
Ischial tuberosity
Ischial spine
Sacrotuberous ligament
Sacrospinous ligament
Greater and lesser sciatic foramen
Greater trochanter of femur
Intertrochanteric crest
Gluteal tuberosity
Gluteus maximus muscle
Gluteus medius
Sacrotuberous ligament
Inferior gluteal vessels and nerves
Trochanteric bursa
Sciatic nerve
Piriformis muscle
Pudendal nerve
Internal pudendal vessels
Obturator internus muscle
Gemelli muscles
Quadratus femoris
Superior gluteal vessels and nerves
Gluteus medius
Gluteus minimus
Tensor fasciae latae muscle
Semitendinosus
Semimembranosus
Long head of the biceps femoris
Short head of the biceps femoris
Sciatic nerve
Deep femoral artery

VIII. Popliteal Fossa and Leg

Popliteal fossa Small (lesser) saphenous vein
Sural nerve
Gastrocnemius muscle
Soleus muscle
Plantaris muscle
Popliteus muscle
Sciatic nerve
Common fibular nerve
Tibial nerve
Popliteal vein and artery
Superior, lateral, and medial genicular arteries
Calcaneal tendon
Posterior tibial vessels
Flexor hallucis longus
Flexor digitorum longus
Tibialis posterior
Popliteus Sustentaculum tali
Posterior tibial artery
Fibular artery
Medial condyle of tibia
Lateral condyle of tibia
Head of fibula
Medial malleolus
Lateral malleolus
Seven tarsal bones
Talus
Calcaneus
Navicular
Cuboid
Three cuneiforms
Calcaneal tuberosity
Metatarsals
Phalanges
Tibialis anterior
Superior extensor retinacula

Inferior extensor retinacula
Extensor hallucis longus
Deep fibular nerve
Anterior tibial vessels
Extensor digitorum longus muscle
Anterior tibial artery
Dorsalis pedis artery
Extensor digitorum brevis
Extensor hallucis brevis
Fibularis longus
Fibularis brevis
Common fibular nerve
Deep fibular nerve
Superficial fibular nerve

IX. Sole of the Foot

Plantar aponeurosis
Flexor digitorum brevis
Abductor hallucis
Abductor digiti minimi
Medial plantar artery and nerve
Lateral plantar artery and nerve
Quadratus plantae muscle
Lumbrical muscles
Flexor hallucis brevis
Adductor hallucis
- transverse head
- oblique head

Flexor digiti minimi muscle
Dorsal interossei muscles
Plantar interossei muscles
Fibularis longus tendon
Dorsalis pedis artery

X. Joints of the Lower Limb

Tibial (medial) collateral ligament
Fibular (lateral) collateral ligament
Popliteus tendon Suprapatellar (quadriceps) bursa
Popliteus muscle
Posterior cruciate ligament
Anterior cruciate ligament
Medial meniscus
Lateral meniscus
Deltoid ligament
Calcaneofibular ligament
Anterior talofibular ligament
Spring ligament (plantar calcaneonavicular ligament)

Block V Reflections

Chapter 6

I. Posterior Abdominal Structures

Has your lab group dynamic changed since Block I? If so, how has it changed?

What is your role in your lab group? Did you expect to have this role when you entered lab?

Have you gotten to know your lab team outside of lab?

How has your lab group supported one another throughout HSF?

II. Posterior Abdominal Wall

Is dissecting the experience that you thought it would be? What aspects of the anatomy lab are different than you thought they would be? What has surprised you about anatomy lab?

Chapter 7

I. Pelvis

Do you view medicine as an art, a science, or a combination of both? Why?

What qualities do you want to have as a physician?

Do you have any role models in medicine? What makes these individuals stand out to you?

II. Transaction of Abdomen and Splitting of Pelvis

Reflect on splitting your donor's pelvis.

III. Urogenital Triangle

Do you still view your donor as a human? Why or why not?

How have you balanced learning the material and finishing each lab while recognizing that you are working with a human body?

How has your group handled the above question?

Think about the bag of organs on your table. Do you notice it regularly? Where is it?

Chapter 8

I. Anterior and Medial Thigh

What is the musculature of your donor's lower limbs like?

What can you imagine about your donor's lived body based on their musculature?

How does the musculature of your donor's lower limbs compare to other donors'?

II. Gluteal Region and Posterior Thigh

Think about the relationships that you have formed with the HSF faculty. Which relationships stand out the most to you and why?

Think about the relationships that you have formed with the Medical Humanities faculty. Which relationships stand out the most to you and why?

Think about the relationships that you have formed with your classmates. Which relationships stand out the most to you and why?

III. Popliteal Fossa and Leg

Reflect on dissecting your donor's feet.

IV. Sole of the Foot

How do you feel to have only one lab left with the donors?

V. Joints of Lower Limb

What will you miss about anatomy lab?

What will you not miss about anatomy lab?

Would you change anything about your anatomy lab experience if you could?

Post-Lab Pause: reflect on what you will remember about your donor, the 25 other donors, and your experience in the anatomy lab.

What was your donor's name?

How old was your donor when they died?

What was your donor's profession?

What characteristics will you remember about your donor?

What characteristics will you remember about other donors in the lab?

What experiences in the anatomy lab will you hold on to?

If you could write one thing to your donor, what would it be?

Donor Memorial Service Reflection, January 2018

...I want to begin with a question. What have we learned from this unique experience? And I include "we," because learning doesn't stop simply because one becomes an instructor. We have learned from you and your cadavers, just as you have learned from them and us.

Certainly, you have learned about human anatomy, but also have learned a new vocabulary. You've also learned about:

3-dimensional relationships
Variations
Pathology
Palpation
Pattern recognition
The tensile strength of various tissues
Manual dexterity
Integration
Interpolation, from body to X-ray, to CT, to MRI

Equally important, you've learned about yourselves and have built upon a process that will continue throughout your life.
You've learned about:

Reflection
Collaboration
Stress, and how to manage it
Sensitivity
Uncertainty
Discipline
Communication
Conflict resolution
Questioning assumptions
Critical thinking
Self-confidence
Observation skills
Professionalism
Teamwork
Coping strategies
Time management
Resilience
Perseverance
Living and dying----life and death
Thankfulness

Sooner than you can imagine, you will become doctors. As you probably already know, "doctor" comes from the Latin, meaning "teacher." You too will teach your patients and your colleagues.

Let me share with you a Chinese Proverb: "If you plan for a year, sow rice. If you plan for a decade, plant trees. If you plan for a lifetime, train and educate people." That is my wish for each of you...

- Dr. John Hansen

The following reflections were shared by current and former URMC faculty:

Reflections on the Anatomy Lab: A Three Legged Stool

Leg One:
The image is somewhat blurred by the cataracts of time but takes me back more than 5 decades to a 3 story house in the stifling, hot climate of late August in Philadelphia. The windows of the house were open wide, fans whirring, but the odor of the embalmed donors was penetrating. This was my anatomy lab. My table was on the 3rd floor. The climb to the 3rd floor on the first day of our anatomy course was very long. It felt as if I was trying to ascend Mt. Everest. Upon reaching the summit, I was greeted by a quiet, respectful environment not at all influenced by the heat or odor that surrounded me and all of my classmates. Thus the anatomy lab began.

Leg Two:
This anatomy lab was quite different. It was the laboratory of the operating room where I would spend a good part of the next 3 decades of my life practicing plastic surgery. The room was air conditioned with excellent lighting. Quite a changed from Leg One. The environment on most occasions was quiet and controlled. The task was the same. To dissect and explore the wonders of the human body. But in this case the goal was to cure disease or correct deformity, not to reveal the savage results of age and disease that were encountered in Leg One.

Leg Three:
Fast forward 3 decades. I had the privilege of returning to the cadaver lab to work with the URSMD Class of 2007 as they began their journey to become doctors. I experienced some trepidation about returning to the anatomy lab not having been there for many years. I went to the lab several days before my first session to reacquaint myself with the quiet, peaceful , respectful environment that was in stark contrast to the environment of some days in the operating room.
The rewards of this third leg of the stool were the greatest of my career. Helping students learn from their donors about the wonders of the human body and the diseases that could ravage that body. I'm not sure, even if the cataracts of time had not interfered, that I had that same feeling almost 6 decades ago. I'm grateful that I could return to the source to have a second chance.

Elethea(Lee) H. Caldwell, MD
Professor Emeritus, Department of Plastic Surgery

Anatomy Lab
Two Degrees of Separation

It was 1983 when I started medical school. I was attending the Boston University School of Medicine and Dentistry and my first friends were a group of 5 students who were my anatomy lab partners. We were close throughout medical school. I don't think I ever told them but I had only two degrees of separation from our cadaver who was the mother of my father's colleague, a fact based on her donation and a description he gave me but I honestly do not remember how the conversation with him got started.

The anatomy lab was a very large open room with a high ceiling. I think we had 125 students in our class so I am guessing there were 25 cadavers in all. I only have vague recollections of the experience but do remember being honored and indebted to the person before us. I have been meaning to fill out the forms to be an anatomical donor if I can't been an organ or tissue donor and, with that in mind, I just printed off the forms and will fill them out when I am done writing this essay, have my wife and one of my sons sign as a witness this weekend, and send the forms to the URMC Anatomical Gift Program next week.

So what are my vague recollections? I remember our cadaver was in the middle of the room. I can see in my mind's eye that 3 of us were desirous of dissecting and 2 of us were happier to observe. I know we cared about each other. One of us went into Emergency Medicine, one into Internal Medicine, another into Radiology, the fourth into Psychiatry, and I started out in Pathology.

I remember leaving the lab late one hot summer night. I was driving home and was going through a tollbooth and touched the hand of the attendant as I give him the 35 cents required and thinking to myself that he was only 2 degrees of separation from the person—the cadaver—who made it possible for me to begin to understand how the human body works.

David Kaufman, MD
Director of Surgical Intensive Care Unit
Associate Dean for Advising

Anatomy Lab: Then and Now

September 1964. The first day of medical school at St. Louis University. The city still held on to its promise of a hot and humid autumn. New friends and anxious colleagues gathered and set to work with determination. The morning went quickly, and relatively benignly, with lectures in biochemistry and physiology, but in the back of all our minds was the one o'clock Gross Anatomy class. We all talked ourselves into the possibility that maybe it could start with a few lectures, which would delay that crucial moment when we would have to face the inevitable meeting with a human cadaver.

At precisely one o'clock two men in white coats walked into the room. One was short and portly: Professor Ronan O'Rahilly, chairman of the anatomy department. Next to him was a tall, thin, almost wraith-like man, Professor Turlogh FitzGerald. Any hope of delaying our meeting with fate was quickly dispelled when Professor O'Rahilly said, "Gentlemen, if you would follow me to the laboratory," despite the fact that there were four women in our class (after all, it was 1964). As we all marched down the darkened hallway, the overwhelming smell of formalin grew stronger.

Once in the lab, we were quickly assigned to our pre-ordained tables in groups of four. O'Rahilly sternly announced, "Gentlemen, unzip the bags in front of you and meet the person whom you are going to get to know quite well over the next few months. Notice I said 'person.' They were all persons in life, and in death you will respect them as persons as well."

I do not believe we ever saw Professor O'Rahilly again. Our mentor was to be Professor FitzGerald and a gaggle of anatomy graduate students. Professor FitzGerald had clearly come from the United Kingdom, probably Ireland, since whenever he said the word "tissue" he pronounced it as "tiss you", prompting one of my colleagues to say, a little too loudly, "tiss you, why I hardly know you!" A withering look from the professor put paid to any more references to that little joke.

The anatomy dissection schedule was brutal and unbending. Deadlines for completion of scheduled dissections were strictly enforced and all four members of each team were held jointly responsible for the completion of each task. Clearly, the afternoon lab sessions were inadequate to keep to the schedule, thus requiring extra trips to the lab on weekday evenings, Saturday afternoons, and even some Sundays as well. There were many days when we left the lab with fingers numb from the strong formalin.

Each team worked together, some dissecting, while others held the books and pointed out the specific structures. I especially remember how proud we were of the dissection of the brachial plexus. Every time I have operated on the brachial plexus over the subsequent years, be it for gunshot wounds, knife wounds, tumors, or stretch injuries, I still recall that beautiful dissection.

[I recall a curious correlation occurring during that year. As the four of us were "deconstructing" our cadaver, the St. Louis's Gateway Arch was being constructed. Beginning with the two feet sections, it would gradually rise to meet in the center in 1967. News programs would constantly update the public on the progress of construction, displaying steel girders (skeleton), plumbing (vasculature), wiring (nervous system), pulleys and cables that became the elaborate elevator system that carried people to the observation deck at the very top (muscles and tendons) and finally, the glorious, blindingly bright stainless steel covering (skin).**]**

Gross Anatomy class ended in mid-March 1965. The bodies were cremated after a Solemn High Mass was celebrated in their honor for having given the gift of knowledge to us students.

The four of us graduated in 1968. Two had gotten married during medical school, and me and the other followed suit immediately after graduation. We all went off to our internships and residencies, and all of us served a few years in various branches of the military.

Over the years we would gather for class reunions at the prescribed five-year intervals and spend most of the time together, all of us still married to our original spouses. But 2018 was the "big one," the fiftieth reunion. Afterward, we decided that 2023 suddenly seemed too far away for comfort. We all had varying degrees of health issues, and we were down to three of the originals. We were all geographically within driving distance of one another, so we decided to have our own reunions on an annual basis.

We converged at a resort in southern Pennsylvania in July 2019. We talked and laughed a lot. We ate good food, drank good wine, and put away a substantial amount of an excellent bourbon. We slow-walked the grounds and vowed to meet again in 2020, keeping in mind, as one of us pointed out, "people our age don't even buy green bananas."

Robert Bakos, MD
Professor Emeritus, Department of Neurosurgery

Cadaver Reflections from a Pre-Cadaver

Many years ago, I was a first-year medical student at Case Western Reserve. Our lecture hall was at most 100 feet from my lab. I have a visceral memory of sitting in the lecture hall and having some instruction related to anatomy and then having to walk to the lab. It felt as if the walk was in slow motion and lab was miles away. It's strange how much closer the lab became as the year progressed.

Any cadaver is an amazing gift. Mine had an incredible bonus for which I remain ever grateful. Remember that this was 1974. Most of us smoked. I certainly did, a pack a day of Pall Malls. My cadaver was a smoker. As soon as his lungs were revealed I resolved to quit. I have not had a cigarette since.

Fred Hafferty wrote a wonderful book *Into the Valley*. Fred, a sociologist by training, embedded himself with a first-year medical school class. Much of the book centers on their experiences in anatomy. He uncovered what he called cadaver stories, myths that were untrue, but which were universally believed. There would be a story of someone who took the cadaver home and propped it in the entranceway of their home for Halloween or something equally horrible. Fred thought that this was how students coped. They were doing something that was a terrible transgression, cutting into another human being, but they consoled themselves with the idea that they were not nearly as bad as the perpetrator of these horrible events. When I was a student, we were all convinced that one of our classmates had been kicked out of school for taking gold fillings out of cadavers and making them into a ring. No one was missing from our class, but we were all convinced that this happened none the less. There may have been an interesting and hopeful social change. I was an Advisory Dean for many years and did not hear similar stories from U of R students.

A true cadaver/skeleton story. My mother was a medical student in Argentina in the 1930's. She told me two stories. On the first day of anatomy they were crowded around a dissecting table while their professor went to work. In those days there were very few women in the class. She worried about how she would handle this, so found the biggest man she could and asked him to keep an eye on her. He then promptly fainted. She regarded him as her first patient and she was able to successfully resuscitate him. My habuelo was apparently a wheeler-dealer. In one of the periods when they had money, they hired a maid fresh off the boat from Madrid. She seemed happy enough, then three days after her arrival, she abruptly announced that she was heading back to Spain. Turns out that she was cleaning up in my mother's room and found her bone box under the bed. She believed that this was the way that the Blitzmans treated Christians and that she better get out while the getting was good. My mother is now 102 and signed up recently to become a Harvard cadaver.

I had signed up several years before with the U of R Anatomical Gift Program. Why? I think of myself as a medical educator. My career in medicine has been enormously satisfying. I owe this to my teachers, and I think of my cadaver as my first important teacher. I very much want to pay it forward. It will be my last chance to repay my debt.

Laurence Guttmacher, MD
Professor of Clinical Psychiatry
Professor of Clinical Medical Humanities and Bioethics

First Day in Anatomy Lab

September 1963

The room was large, with 24 stainless steel rectangular coffin-shaped and -sized boxes on legs, each with a stainless steel lid. We 96 first-year medical students filed in slowly, mostly silent, with some nervous tittering, and gathered in groups of four around the steel containers which held the earthly remains of what previously had been living people. On instruction, we removed the lids and stowed them on the crossbars underneath. The body at the bottom of ours was covered with a heavy canvas-like cloth; one of us operated the foot-pedal which brought the body up to working height.

We were instructed to pull back the cloth and look at the face for a few moments. Our group had an elderly woman who appeared peaceful; I began to wonder about her. Who was she? Did she have a husband? Children? Grandchildren? Had she had a happy life or a life of pain? What clues might I get from her face and her body? I hadn't considered whether I would want to know very much about this fellow human being—how much of who she was, what her life and her death had been like. We each have a story. But shortly we were instructed to replace the cloth and extend the arms, two students on each.

Starting dissection on the arm was a good choice. Wherever the humanity resides, it's not in the arm. Wherever those things are which make you a person, maybe in the head, maybe in the heart, they are not in the arms. It's possible to look at the arm more as a mechanical structure than as a part of a person--at least it's something I could try and do, leaving dealing with the essence of this woman for another day. But not everyone was able to do so.

About 20 minutes into the dissection lab, after a rather precise set of instructions on how to proceed, it was time to make the first skin incision. One of the students at another table ran from the room retching, and one of the anatomy assistants ran after him. The student never returned, not to anatomy lab, not to medical school. A few days later we had a new classmate who was admitted from the wait list.

Victor A Poleshuck, MD
Professor Emeritus, Department of OBGYN

Table 29

There were one hundred and thirty-five people in my medical school class and during orientation I met many of them including the other women- all sixteen of them.
One woman was married to a second year student and he told her it was very, very important to be in a group at the gross anatomy table that worked well together.
So by the end of orientation five of us decided that we would sign up together.

Our first day of gross started in the lecture hall where Dr. J., a very senior faculty member and director of the course, ran through some basics for us. As we were about to go to the lab he said, " one more thing, there will be no all girl groups": Oh my.

Once upstairs the five of us chose a table and wrote only our last names on the sign up sheet. A TA came over and asked if we had heard what Dr. J. said We said we had and in 2.5 seconds Dr. J. was at our table and he was not pleased. He repeated his directive and one of us asked why. " Because nothing gets done!"
The Bard College graduate in the group said, " do you think we're going to play cards?".
By now all I could think of was that we were infuriating this important man on our first day of med school. With false bravado I said, "ok,ok, we'll go" as I grabbed a classmate by the arm.
Dr. J. smiled benovently and said, "come with me girls, I'll put you with some repeaters and that will help you". Oh my.
Any anxiety I had about dissecting a human being was replaced by relief and anger

The three men waiting at table 29 turned out to be nice guys. We became good friends and we made a great team. We named our cadaver Molly and we treated her with respect.
I became quite good at devising mnemonics to aid our learning but none can be repeated here.
The lab had a large old circular stone fountain that was activated by pushing a foot pedal. It was a pleasant ritual to wash there after dissecting and it made me feel connected to all the classes that had used it before me. In fact, it became very clear to me that the entire experience was something akin to holy and that it was a great privilege to be allowed to do it.
I learned most of my anatomy from Molly and I am so grateful for her gift. I have thought of her often since those days and say a quiet thank you.
The only book I still have from first year is Grant's Atlas and it's on my current book shelf
What happened at Table 29 did not stay at Table 29. I'm good with that.

Mary Lou Meyers, MD
Professor Emeritus – Department of Psychiatry

Reflections on Anatomy Lab

No matter how long it has been between the first-year medical school course, Gross Anatomy, and the present, just thinking about the course triggers powerful memories. During this course as first-year medical school students, we quickly recognized that we were moving into the reality and the seriousness of our personal and educational quest to become physicians. Few in our class were prepared for our abrupt introduction to Gross Anatomy and what would become one of the seminal transitions on our journey to becoming a doctor. Even our anatomy professor who addressed each us from the first day of medical school by the title, doctor, could not soften the surprise that lay ahead in the Gross Anatomy laboratory.

The two days of introductions were over abruptly and on the third day, we were told to report to the Gross Anatomy laboratory. We learned that for the next six months, we would be taking intensive Gross Anatomy and Histology courses; both combined didactic and laboratory experiences. No questions, no discussion. Similar to rumors that grades in college organic chemistry would factor heavily into our competitiveness to get into medical school, we thought that these first two medical school courses might make or break our pursuit of becoming doctors.

With anxious expectation and some chatter among us, we waited at the laboratory door where we were assigned the number of the dissection table that we would be sharing with three other students. As we glanced into the laboratory, we saw a room full of covered, still figures on each of the 25 tables. The anxious chatter among us ceased and there was nothing but silence as we peered into this room. As each medical student went into the room and found his/her table and met the other students, we said little of substance to each other barely mumbling our name. We waited dutifully for our instruction for the next steps only noticing the pungent odor of formaldehyde that would permeate everything we owned and would mark us as first-year medical students for the next six months no matter where we went.

Our four tablemates looked (stared) at each other still saying very little. My three table-mates' faces communicated everything I was thinking. We were frightened despite the chatter and bravado among us the previous two days of medical school. We had many questions only shared in retrospect at our class reunions. We wondered whether we would get along with our tablemates, whether we would be able to master the course material, and whether someone might tell us something about the person lying before us covered from head-to-toe.

Our instructor provided relief from our stunned states as he spoke of the gift from each of the deceased that allowed us the privilege of dissecting one's remains; the varied lives that each may have lived and the respect that we were to afford our cadavers as we dissected different organ systems. We were told that each day before we left that we needed to protect the body by wrapping it in thoroughly drenched formaldehyde covers.

We then were asked to gently remove the piece covering the body and for the first time the person who would become our daily companions for the first six months on our long journey to becoming physicians was now a real person. Most groups named their cadaver to humanize the deceased person. My three male tablemates liked the name, "Fred," so I agreed. In retrospect, perhaps the choice of the name of "Fred" was a simple relief from the terror we were experiencing. None of us had any creative energy to suggest another name.

Now that five decades have passed since the memorable experiences in Gross Anatomy lab, other than knowledge acquired, were there longer-term impressions taken from this six-month immersion into learning about the marvel of the human being? Absolutely yes. What follows are brief examples of those lessons.

1. Tea and formaldehyde

Marcel Proust was right that past experiences triggered by emotional and physical experiences often are recalled over time when one experiences the physical experience (smell, taste etc. at a later date.) (Marcel Proust, Remembrances of Things Past). As Marcel Proust experienced memories of the first time he tasted tea at home when drinking tea in a new circumstance, so do I have remembrances of things past smelling formaldehyde in years to come and the pungent odor in the Gross Anatomy laboratory from many years before.

2. Attitude/values as physicians

Respect:

We learned from our professors in Gross Anatomy laboratory that respect of all human beings and of the human condition, is an enduring first priority. Respect of persons lying before us either in a cadaveric state or future patients was and would be our first priority. We needed to remember each day that as we pulled back our cadaver's cover that this person had provided us the opportunity to learn about human anatomy so that we would become knowledgeable physicians. When I heard the name of the course, Gross Anatomy, I did not expect to meet humane, warm professors who reminded us of our future, serious responsibilities of being a doctor.

Kindness:

I learned from the Chair of Anatomy who taught most of the didactic Gross Anatomy course that kindness and gentleness are special gifts.

It was difficult for me to complete the practical examinations accurately in Gross Anatomy as when supporting structures were removed through fine dissection, my lack of depth perception made it almost impossible to identify certain structures, particularly nerves. During one of the practical examinations, I left the dissecting room highly frustrated and sought out the Professor working in his laboratory. Very upset I told him how that I could easily pass the written examinations, but was failing the practical exams for the reason stated above. With a smile, he asked me whether I was planning a career in Surgery. I reassured him, no, as I had always wanted to be a pediatrician. He then said if I promised him that I would not become a surgeon, he would take my grades on the practical exams into account in the final course grade as he knew that there were some students in each class that had minimal depth perception and had problems with the practical. He explained that if I learned the course material through the didactic portion of the course, after having received my M.D., no patient would ask whether I had passed the practical exams in Gross Anatomy! He was absolutely right as no patient has inquired about any of my medical school experience except prospective students. His kindness still resonates as I was so vulnerable. It was a life-long lesson that when someone comes to me seeking counsel at a vulnerable time in their lives to be kind and gentle. I think of Dr. Armstrong, our kind, gentle Professor.

Support from family

Our families are our most important guides throughout our lives; many sacrificed a great deal to support our becoming doctors. Their support are their love and devotion as well as material support. I shall address the latter.

I became aware that Sobotta's Atlas of Anatomy was a classic and for me could be key to my learning Gross Anatomy. I found that the entire series was very expensive from browsing in the bookstore (no internet then!). Perusing the volumes, I was fascinated by the level of detail of each organ system of the human body and desperately wanted to purchase a set but couldn't afford to do so. I called my parents and with great apologies asked them to support this most expensive investment. After discussion, they agreed to do so; I use those volumes to this day with great gratitude.

Support from peers

Our peers/classmates were our constant companions starting in Gross Anatomy. Life-long friendships began at our Gross Anatomy tables. We spent many hours together painstakingly dissecting our cadavers, learning together, and finding the strength to trudge through Gross Anatomy. We ate together when lunches cost one dollar, we walked to our homes together often in knee-high snow, studied together, and socialized together. In Gross Anatomy, we made a huge transition into our future lives as physicians. No, at the end of the six-months of Gross Anatomy, we were hardly doctors as our Anatomy professor called us, but we were different, we had changed, and in so doing, had a stunning start to our futures as real doctors with our peers by our sides!

Conclusion

In retrospect, after five decades-plus of being a doctor, I am eternally grateful for the privilege of being a member of our noble profession. It all started in the Gross Anatomy laboratory where the pungent odor of formaldehyde was ever-present, its memories still are, and the real work began!

Lissa McAnarney, MD
Former Chair - Department of Pediatrics

Anatomy Reflections

I arrived in Rochester in 1965, and I was pretty sure the Admissions Committee had made a mistake (expecting someone a lot smarter than I). I had heard stories about how hard medical school was, especially Gross Anatomy. Indeed, we were told that our vocabulary would double during the coming year during our "Orientation" (which, in those days, consisted of a two-hour class meeting during which we were told of the expectations of us, given our weekly schedule, told the location of the bathrooms, and issued our bone box and a microscope).

This was well before George Engel proposed the biopsychosocial paradigm, and the medical school culture was not nearly so welcoming as is the case today. Even though "BPSM" was not a component of the medical school culture at that time, I've been pleasantly surprised by how, over the years, members of my class have been "retro-fitted" with BPSM values. Our class size was about 75 and quite mono-cultural: and all but two were men, and all but three were Caucasian (one Asian, one African, and one African-American). And, as I had feared, all turned out to be smarter than I. Whether one had performed community service or undergraduate research was not a box to be checked on the admissions form, but again, my classmates subsequently have pioneered in those aspects of medicine as well.

Physically, the medical school was quite an austere building. I believe that Dr. Whipple didn't believe in spending much money beautifying the physical plant. All of the interior walls were of gray unpainted brick, hallway ductwork was exposed, and the floors were of gray concrete. An exception to the unpainted brick walls was a curious patch of white paint on the floor/walls of stairwell corners. We were told that the purpose of this paint was to discourage the spitting of tobacco juice into the corners (!). Two other exceptions to the plain appearance of the building were the main hospital lobby (which is now the main reading room of the Miner Library) which had impressive woodwork and comfortable furniture, and the main reading room of Miner Library (which is now occupied by the corridor just outside the current library.

The Gross Anatomy labs were located on the fifth floor (which, I believe, is now occupied by Anesthesiology offices. They too were quite stark. It is said that the strongest link to remote memories has an olfactory mediation. That is certainly true for my recollections of the Gross Anatomy course. The pungent odor of formalin permeated every aspect of my first year of medical school. As I recall, gloves were not worn during dissections, and gowns were available, but infrequently worn and not laundered through the course of the year, so one's hands and clothes became saturated with formalin. No amount of soap or laundering could expunge the smell. The elevators frequented by first year students were never free of the odor, and non-first-year students avoided those elevators. Diners in the hospital cafeteria would carefully steer clear of tables occupied by first-year students for that same reason. Today, fifty-five years after my Gross Anatomy course, the odor of formalin is apparent whenever I open Grant's Atlas of Anatomy.

I suppose there must have been a lecture component of the Gross Anatomy course, but I cannot recall any lectures. My only memories are of the dissections. I believe our dissections lasted two hours daily for the entire year. The most daunting of the dissections were those of the head/neck and the perineum. The brain was not dissected until the Neurosciences course during second year. Four students were assigned to each cadaver; typically, there was one "cutter," an "assistant cutter" who cleaned up the operative field, one "researcher" who looked up possible explanations for what we were uncovering, and one "reader" who read for the group from the dissection manual. The dissection manual was written by one of our professors (Dr. Charles Tobin), so we had to take its instructions literally.

On Day 1, our group of four students greeted our cadaver with a mixture of terror, awe, reverence, fascination, and queasiness. The least queasy was assigned the role of "cutter," (and he eventually became a general surgeon). Our cadaver was a withered, very elderly woman about whom we knew nothing, except

her anatomy; I don't think we even uncovered the cause of her death. I always felt rather shortchanged that we never knew the person whose anatomy we had explored so thoroughly for all those months. Rather surprisingly, I cannot recall any dark or locker-room humor about our cadavers; each seemed to be respected and revered. As is the case today, a service was held after the course to thank and to honor the donors.

In retrospect, after 55 years, I would have to say that, while it was a very impactful course, I remember very little of what was taught in Gross Anatomy. It provided a common vocabulary for us as physicians and served as an initiation by fire, but I must admit that my recollection of muscle insertions, ligamentous attachments, foramina of various nerves, etc., atrophied many years ago. My knowledge has been less permanent than has been the aroma of the formalin. And I still regret that I never found out whose spot I took when the Admissions Committee mistakenly admitted me.

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REFLECTIONS ON THE ANATOMY LAB 54 YEARS AGO

In LIFE, events come and go. Good events are frequent, but seldom remembered. Challenging events seem to be available whenever you want to bring them up.

I began my medical school experience in 1966. And back then the first experience was the anatomy lab. Dr. Bo was in charge. (Don't ask me if I can remember any of the other professors because I cannot. But that should tell you how significant my anatomy experience was.)

My partner was Monty Woods. Since my last name is Woods, it was logical that we would be paired.

Our cadaver was named Rose. Rose, bless her heart, was an 89 pound woman of about 90 years old.

Dissecting muscles, blood vessels, and other bodily parts meant that at times a thin strip of tissue had to be identified as either muscle or vessel. "Does this look like a muscle?"

Meanwhile, in the next table was a 19 year old construction worker who had died from carbon monoxide while he and his girl friend were engaged in interactions (that is a safe word) . Watching the dissection of that body was like watching an anatomy lesson from a body builder.

And of course at the end of the sessions each day we smelled of formaldehyde. You can imagine that we were the only ones who got onto the elevator to move to the next medical teaching session.

So what is the lesion here? Not sure. Today much of the anatomy is taught by computer. There even was a time when medical schools tried pigs for anatomy dissections. That obviously did not last long.

I think that the reason the memories of my anatomy lab experience are so vivid was the togetherness that the anatomy lab created for all of us, bringing together a community of eager, driven, and yet somewhat terrified students just beginning one of life's most precious journeys.

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