Illustrative Quotes (and Memes)

Here are a collection of anecdotes, witticisms, and excerpts, that I think illustrate important concepts in surgical pathology. And, to keep things interesting, I've included some of my favorite pathology memes that I've come across too. I've tried to attribute the memes whenever possible, but I don't know the original source of many, so let me know if they're yours and you'd like credit. Also, if you have any other great memes or quotes, send them to me!

Dr. Richard Kempson

Dr. Kempson, known to many of his disciples as Dr. K and his friends as Dick (although I of course, as a resident, was never so boldly familiar as to call him that!), trained under Lauren Ackerman at Washington University in St. Louis before being recruited to Stanford with Ronald Dorfman to establish a division of surgical pathology.

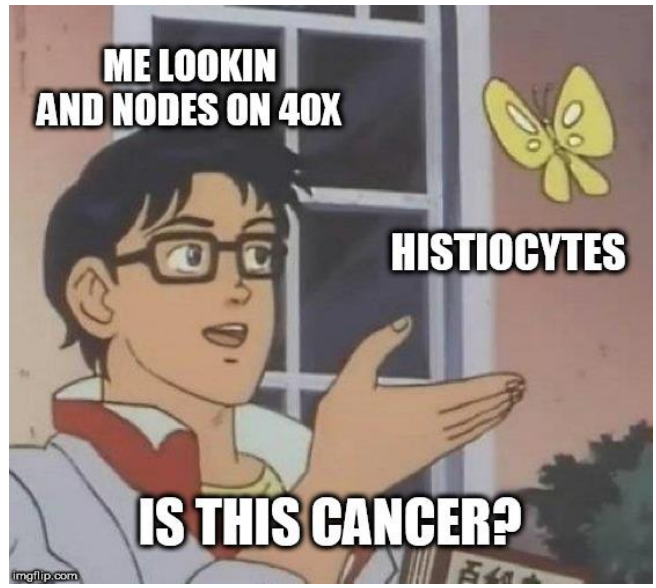
I had the pleasure of working with Dr. Kempson during my residency and fellowship, when he was an emeritus professor that still signed out occasionally and held regular teaching sessions. I'll always remember his strong emphasis on diagnostic criteria and correlation of these criteria with clinical follow up data. And, naturally, I remember is wry wit, which I think come across in the quotes below.

"The road to hell is paved with epithelioid histiocytes."

Commentary: Epithelioid histiocytes, which are benign and found in many locations, particularly lymph nodes, can look scary and malignant sometimes, especially on cytology smears. Always ask yourself if you see a ton of discohesive epithelioid cells with abundant cytoplasm, "could these be histiocytes?" Many a pathologist has ben led astray to the diagnostic "hell" of an incorrect diagnosis by them.

"Always carpool to court."

Commentary: Always share challenging cases—don't be a hero! Show your colleagues and/or consultants. This is basic due diligence, and, furthermore, it is protective from a medicolegal standpoint. It shows that you thought about the case and didn't blow it off, and, if nothing else, you can carpool to court later if sued.



From twitter: Derek Hoerres, MD (@DrDerekHoerres)

"We're not machining ball bearings."

Commentary: Ball bearings are small metal balls used in machines that help surfaces move against one another that must be manufactured with ultra precision. Some clinicians seem to suffer from the impression that we too can operate to 3 or more significant digits of precision. While we want to be reasonably precise and provide helpful measurements, there are limits to what we can accurately, precisely, and meaningfully report.

“CD34 is the Vimentin of the 90’s.”

“It stains with Vimentin? Oh, well now we know it’s mammalian!”

Commentary: Together, I think these quotes get at the non-specificity and passing noteworthiness of many immunohistochemical stains. As you start consuming the pathology literature, you’ll notice this recurrent pattern: A new stain is developed and touted as ground breakingly specific. Then, after it finds its way into practice, it quickly becomes clear that it actually stains a lot of things.

“Surgeons are like children; they have a bowel movement and then want you to praise them for it.”

Commentary: While uncharitable, as a parent of young children I find this quite a funny visual. Joking aside, always be civil and professional at work, please.

“If the whole tumor fits on one slide, it’s probably not a sarcoma.”

Commentary: Sarcomas tend to arise in deep soft tissue where they have the freedom to grow rather big before coming to clinical attention. As such, they usually don’t all fit on one slide. While there certainly can be exceptions to this rule, it I think it nevertheless provides a helpful reminder to be extra sure before calling something small a sarcoma.

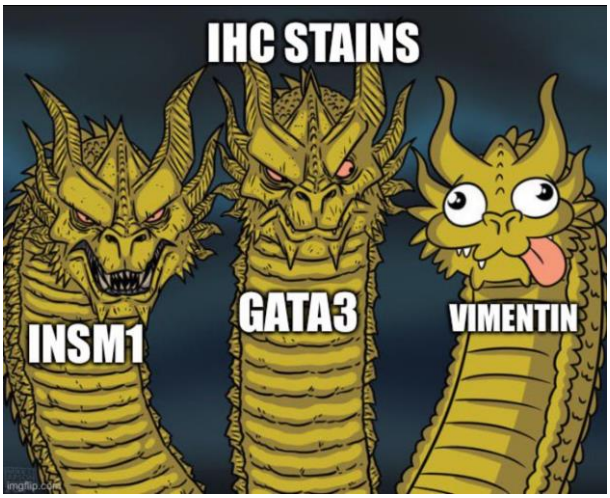
“Fibrosarcoma has been defined out of existence.”

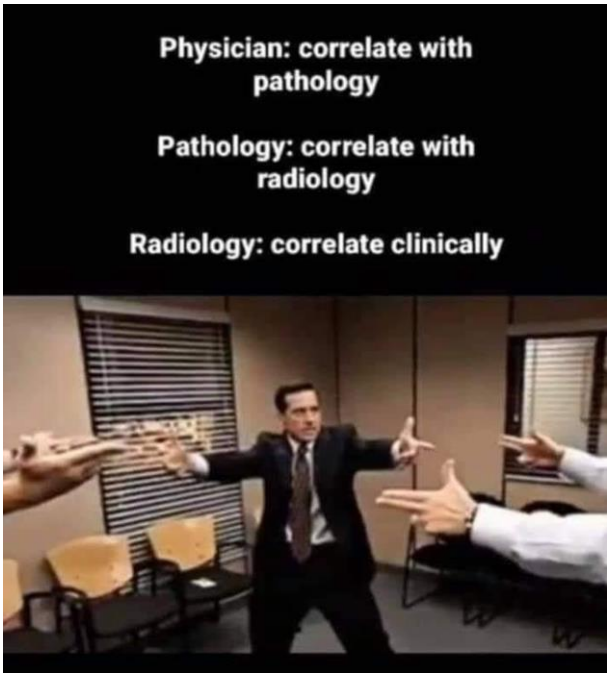
Commentary: With enhanced techniques and definitions, many lesions previously described as fibrosarcoma are now recognized to be synovial sarcoma or MPNST’s. Likewise, Type II papillary RCC of the kidney has been almost “defined out of existence” with the discovery of FH-deficient RCC, and other entities.

“You are responsible for what the surgeon/oncologist understands.”

Commentary: As quoted and discussed by Dr. Jesse McKenney at the Arthur Purdy Stout companion meeting at USCAP 2024, most clinicians know less about pathology than at any point in modern history and it’s very easy for things to get misread or misinterpreted and end up as difficult to correct “chart lore.” Simultaneously, we are in a time of information overload with superfluous information everywhere necessitating rapid filtering.

So, do everyone a favor and make the report easy for them to read. Be very clear, concise, and helpful. For more suggestions on writing reports, check out “Kurt’s Style.”





"We pathologists also need to address the concerns of reproducibility. The value of checklists is lessened if all of us are not using the same definitions for the morphologic features on the lists. Definitional boundaries for tumor types and grading criteria should be established on the basis of the outcome of large numbers of patients, and this information should be widely disseminated. The same applies to other morphologic parameters, such as what counts as evidence of vascular invasion...

In an increasingly cost-conscious environment, morphologic parameters currently represent a cost-effective method of predicting prognosis and providing information to guide therapy. These parameters, however, are effective only if they are reproducible, if the morphologic parameters are proven to be valid and if essential information is routinely included in every pathology report."

Commentary: This is from an editorial written by Dr. Kempson in 1993 (PMID: 8379525) and highlights several important ideas he often emphasized in his career: 1) Improved diagnostic reproducibility through use of strict criteria and 2) Correlation of these diagnoses to clinical outcomes through large studies to guide patient management. Luckily, I think that much of the field has embraced these values.

"When counting mitoses, I like to see the hairs."

Commentary: Mitotic figures are extremely important in assessing the biologic potential of some tumors, such as smooth muscle tumors. However, simultaneously, there is suboptimal interobserver agreement when it comes to designating and counting mitotic figures.

Therefore, to improve reproducibility, he advocated that "Only definite mitotic figures should be counted as such. When there is uncertainty whether a structure is a mitosis, it should be excluded from the count. Pyknotic nuclei are common in smooth muscle tumors and should not be mistaken for mitoses."

"Guardians of the wax… and the patient."

Commentary: This is the title of an editorial written by Dr. Kempson with colleagues at WashU and UVA that I thought created a great visual. (PMID: 7572782) As anatomic pathologists, we are responsible for maintaining the paraffin (wax) blocks of patient tissue, and, in doing so, protecting the potential future interests of the patient (in this case from the covetous, single-minded hands of researchers who may not be considering the best interest of individual patients or laboratory accreditation issues).

"All diagnostic pathologists should know then the are in such unfamiliar or difficult territory, so they can seek consultation."

Commentary: This is from an editorial Dr. Kempson wrote with Kevin Leslie and Robert Fechner in 1996 on expert consultation (PMID: 8853058). It is literally impossible to know everything in pathology and it is therefore necessary to be self-aware and humble. Know—and admit—when you don't know something and see that the case gets to someone who does (or at least might—not everything has an answer). Having an ego about getting help will only hurt patients and get you in trouble.

Dr. Juan Rosai

Juan Rosai is a giant of 20th century pathology. Born in Italy, raised and educated in Argentina, he trained with Dr. Lauren Ackerman (see below) and worked at Washington University before moving on to Minnesota, Yale, and MSK.

He first described many diseases, including Rosai-Dorfman disease and the desmoplastic small round cell tumor. He also edited AFIP Fascicle 3rd edition and wrote his classic textbook.

"Guiding the surgeon's hand"

Commentary: This is the title of a book on surgical pathology in America edited by Dr. Rosai. I think it nicely encapsulated our ultimate role—issuing a diagnosis that directs the patient to the next necessary step in management. To this end, sometimes I work backwards from what I think the patient needs and make sure my diagnosis will accomplish that goal.

"Surgical pathologists ought to remain grateful to a centenary technique—hematoxylin-eosin staining following formalin fixation and paraffin embedding-after realizing that there is no other that offers so much essential information so quickly and so cheaply."

Dr. Lauren Ackerman

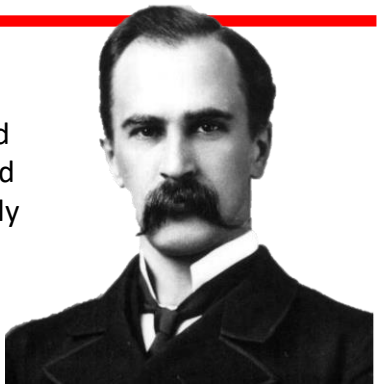
A founding father of modern surgical pathology, Lauren Ackerman founded the division of surgical pathology at Washington University in St. Louis. He was very influential in bringing together morphologic findings with clinical symptomatology and outcome in this teaching and textbook. At WashU, he trained many luminaries in pathology, including Drs. Rosai and Kempson.

"By the very nature of the material submitted to him, the surgical pathologist is bound to make some mistakes. He sees the earliest subtle and sometimes bewildering changes in Hodgkin's lymphoma. He many not recognize that the minimal granulomatous response in a lymph node is really a peripheral manifestation of histoplasmosis. The necessity for follow-up on the patient in whom the diagnosis is not certain is mandatory. Time is often a better diagnostician."

"The surgical pathologist not only must know his own field thoroughly, but he also must have a rich background in clinical medicine. He needs to understand the clinician's needs and respond to them accordingly."

"There is a fundamental unity to the morphologic patterns of disease in the human body that can be appreciated only by being familiar with those patterns as they occur in different organ systems. Only by understanding the pathology of disease as a whole can the manifestation of that disease in a given organ be fully comprehended. This is the main reason why a clinician cannot hope to deal adequately with some small branch of surgical pathology. Disease does not cooperate with him by remaining neatly confined to an anatomic system."

Dr. William Osler



Hopefully he needs no introduction, but Dr. Osler was a Canadian physician and one of the "Big Four" founding professors of Johns Hopkins Hospital. He studied briefly under Rudolf Virchow (below) and practiced some pathology, particularly autopsies, in addition to being a world-class clinician.

“The practice of medicine is an art, based on science.”

“Medicine is a science of uncertainty and an art of probability.”

“The hardest conviction to get into the mind of a beginner is that the education up which he is engaged is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but the preparation.”

“The study the phenomenon of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all.”

“To each one of you the practice of medicine will be very much as you make it—to one a worry, a care, a perpetual annoyance; to another, a daily joy and a life of as much happiness and usefulness as can well fall into the lot of man.”

“If you want a profession in which everything is certain, you had better give up medicine.”

“The very first step toward success in any occupation is to become interested in it.”

“A physician who treats himself has a fool for a patient.”

“In no relationship is the physician more often derelict than in his duty to himself.”

Dr. Rudolf Virchow

Known as "the father of modern pathology,“ the German Dr. Rudolf Virchow coined many phrases that we now use (e.g., leukemia, embolism, thrombosis, chordoma, etc…) and popularized cell theory and the role of cells in cancer.

As an aside, some blame him for WWI. Apparently, he interpreted several biopsies from the larynx of Kaiser Frederick III as benign, only to have the Kaiser die from what is now thought to have been verrucous squamous cell carcinoma not long after. His early death may have led to political events culminating in WWI.

“In a science so directly practical as that of medicine, and at a time when such a rapid accumulation of facts is taking place, as there is in ours, we are doubly bound to render our knowledge accessible to the whole body of our professional brethren… Let us undertake, therefore, every one of us to fulfil the duties both of an observer and of an instructor.”

From twitter: Dr. Craig Horbinski (@CraigHorbinski)

A potpourri from various sources

"A pathologist looking down the barrel of a light microscope at an H&E-stained slide is doing 'subcortical integrative genomics.'"

Dr. Steven Mentzer, Thoracic surgeon, BWH, as quoted in a presentation by Dr. Andrew Bellizzi

"Thus I learned early of the great importance of a close correlation between clinical and pathological studies. Each complements and supplements the other; it is impossible to do intelligent surgery without a thorough understanding of the pathology of disease and it is equally impossible to make an intelligent interpretation of pathology without a clear understanding of its clinical implications."

Dr. Arthur Purdy Stout in "Guiding the Surgeon's Hand"

"The beautiful colors confuse me."

Dr. James Ewing in "Guiding the Surgeon's hand"

"Epithelioid angiosarcoma can do whatever it wants to."

Dr. Greg Charville, as quoted by Dr. Kim Allison in a presentation at USCAP

"Remember, ordering a diagnostic test is like picking your nose in public. You must first consider what you will do if you find something."

Dr. Catherine DeAngelis, 1994, First woman editor of JAMA

"The camel's nose is under the tent!"

Dr. Michael Hendrickson (referencing when a clinician knows perhaps a bit too much about pathology)

Things I've heard several places, and don't know their original source:

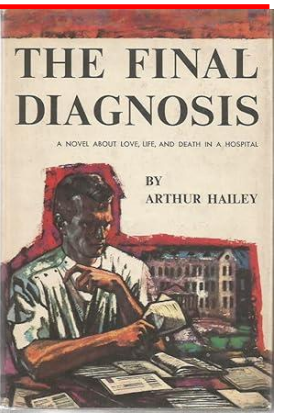
"Not everything has a name."

"You can't diagnose it if you've never heard of it!"

"You can call it whatever you want, just don't call it cancer!"

"Experts can disagree."

Arthur Hailey



As you're likely aware, pathology isn't often center stage in the media or public mind. So, I'm always eager to see how we're depicted and understood. My favorite example is a now out of print novel from 1959 by Arthur Haley called *The Final Diagnosis*.

This book is set at a small academic hospital and revolves around the curmudgeonly old senior pathologist named Dr. Pearson. Although this book is outdated in its dealing with some topics, like gender and race, it is surprisingly still relevant when it comes to medicine and the issues of pathology. The fact that an over 60 years old book so cuttingly describes issues of our field is both impressive and depressing

Here are a few quotes I find particularly interesting and/or relevant:

"The pathologist is often known as the doctor the patient seldom sees. Yet few departments of a hospital have more effect on patient's welfare… It is pathology which tests a patient's blood, checks his excrements, tracks down his diseases, decides whether his tumor is malignant or benign. It is pathology that advises the patient's physician on disease and sometimes, when all else in medicine fails, it is the pathologist who makes the final diagnosis."

"There was something else about pathology. You could lose your sense of reality, your awareness that medicine was of and for human beings."

"In pathology it was a good thing to remind yourself that a lot of the time you were dealing not merely with bits of tissue but with people's lives which your own decisions could change for good or ill. Remembering that fact kept you on you toes and conscientious; that is—provided you were careful not to allow your feelings to affect scientific judgement."

Commentary: These two above quotes I think are important reminders of the dually important roles of humanity and science in medicine. It's easy for us to drift into cool scientific indifference, but I think we are better pathologists by remembering the patient, even if we aren't staring them in the face.

"A cynical summation of the difference between surgeons and pathologists: 'A surgeon gets $500 for taking out a tumor. A pathologist gets five dollars for examining it, making a diagnosis, recommending future treatment, and predicting the patient's future.'"

"Blast these borderline cases! I hate them every time they come up! You have to make a decision, and yet you know you may be wrong… The public doesn't know—nothing's surer than that! They see a pathologist in the movies, on television! He's the man of science in the white coat. He steps up to a microscope, looks once, and then says 'benign' or 'malignant'—just like that. People think when you look there"—he gestured to the microscope they had both been using—"there's one sort of pattern that falls into place like building bricks. What they don't know is that some of the time we're not even close to being sure."

Commentary: I like how this gets at the ambiguity and uncertainty in diagnostic pathology. Every case doesn't have an easy answer, despite perceptions to the contrary. In this case, they send the case out in consultation, only to have the consultants disagree, further muddying the diagnosis…

“The fear struck him. Suddenly he was appalled by the awesome responsibility he would have to hold. It occurred to him there would be no one senior to relieve him of decisions; the ultimate choice—the final diagnosis—would be his alone. Could he face it? Was he yet ready?”

Commentary: I think most new to practice pathologists can relate to this! ;-)

This last scene comes from the end of the book. The old pathologist has just realized that he made a grave mistake that hurt a patient and is now retiring. He is speaking to his replacement, who just finished residency.

“You’re young,” Pearson said. “You’re full of spice and vinegar—that’s good You know your stuff too. You’re up to date—you know things that I never did, never will now. Take my advice and try to keep it that way. It’ll be tough to do; make no mistake about it.” He waived toward the desk he had just vacated. “you'll sit in that chair and the phone will ring, and it’ll be the administrator—talking about budgets. Next time one of the lab staff will want to quit; and you’ll have to smooth that out. And the doctors will come in, and they’ll want this bit of information and that.” The old man smiled thinly. “Then you’ll get the salesmen—the man with the unbreakable test tube and the burner that never goes out. And when you’re through seeing him they’ll be another and another and another. Until at the end of the day you’ll wonder what happened to it and what you’ve accomplished, what you’ve achieved.”

Pearson stopped and Coleman waited. He sensed that in his words the old pathologist was reliving a part of his own past. He went on, “That’s the way the next day can go, and the next, and the one after that. Until you find a year has slipped by, an another, and another. And while you’re doing all this you’ll send other people to courses to hear about the new things in medicine—because you can’t take time out to go yourself. And you'll quit investigation and research; and because you work so hard, you’ll be tired at night and you won’t feel like reading textbooks. And then suddenly, one day, you’ll find everything you knew is out of date. That’s when it’s too late to change.”

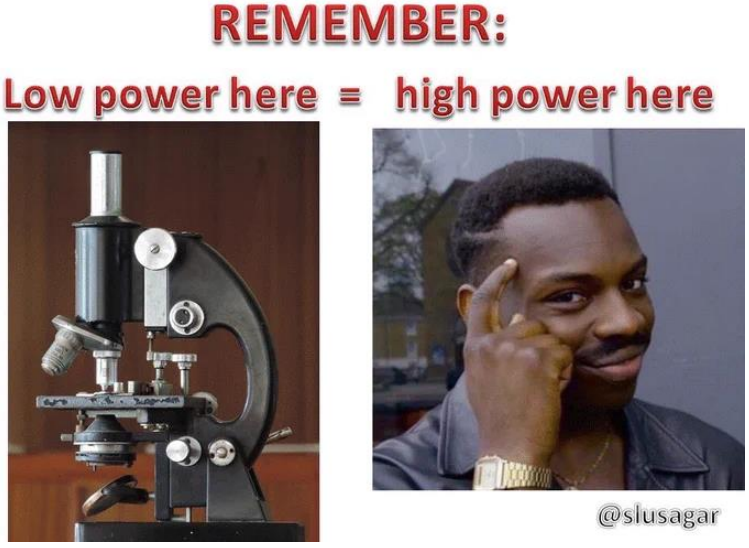
Emotion-charged, the voice faltered. Pearson put a hand on Coleman’s arm. He said imploringly, “Listen to an old man who’s been through it all, who made the mistake of falling behind. Don’t let it happen to you! Lock yourself in a closet if you have to! Get away from the phone and the files and paper, and read and learn and listen and keep up to date! Then they can never touch you, never say, ‘He’s finished, all washed up; he belongs to yesterday,’ Because you’ll know as much as they do—and more. Because you have experience to go with it…”

Commentary: I chose this passage for two reasons: 1) To hopefully spark your curiosity and get you to read this book! (you can get an e-reader copy from most libraries for free), and 2) To bring up that this is by no means the end of your training.

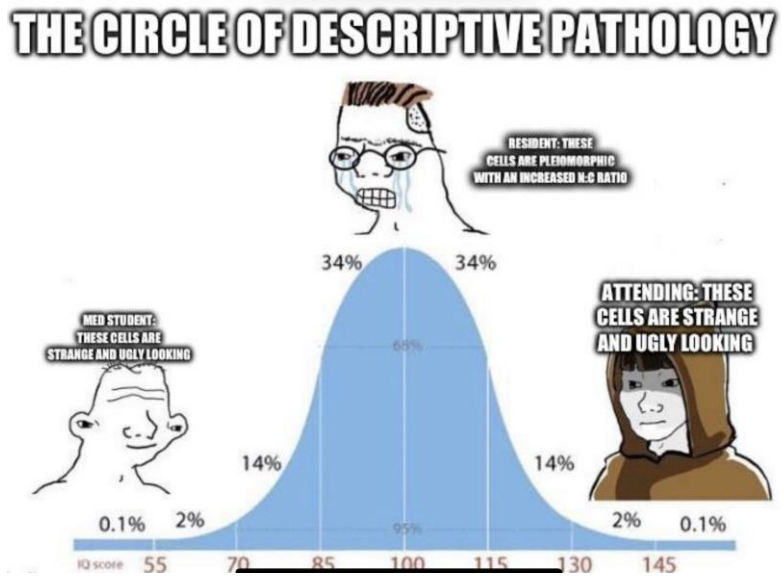
Beyond your residency and fellowships, the field of medicine requires constant learning. Even beliefs from when I was in medical school and residency are now known to be obsolete and I’m really not all that much older than I imagine you are!

You don’t need to keep your nose perpetually to the grindstone, but you nevertheless need to keep reading and listening and staying up to date. Otherwise, you and your patients will suffer. If there is one take away from “The Final Diagnosis,” and there are many, it’s to not let yourself get distracted and stagnate like old Joe Pearson.

More memes for funsies



From twitter: Dr. Ankur Sangoi (@slusagar)



From: @PathologyMemez on twitter