We present in this vignette some of the most egregious mistakes committed by a select few renowned pathologists. Our intent is to document for present and future generations of pathologists and laboratory scientists that to err is human, and nobody is impeccable not even the masters of pathology.

Marie Francois Xavier Bichat (1771-1802), a French autopsy pathologist, was the first full-time pathologist in history of medicine. Although he is recognized for his keen macroscopic observations and his adroitness in writing, he disliked microscopy because he felt that with the microscope, everybody sees the same things differently. Without reliance upon the microscope, it is apparent that he had no clue as to the cellular composition and origin of tissues. Therefore, he introduced the term blastema, an amorphous substance that is formed, according to him, from blood and lymphatic fluid, and is the primary source of all cellular tissues [1]. For over seven decades, Bichat's theory remained unchallenged and was universally accepted as the most plausible concept for the genesis of tissues and cells (including cancer cells). If it is true that the success of a theory is measured by the length of its survival, Bichat with his blastema theory outdid all of the pathologists who are referenced in this review.

Johannes Muller (1801-1858), a German embryologist, histologist, and experimental chemist was appointed professor and chairman of pathology at the University of Berlin in 1833. Muller and his coterie of laboratory physicians, including Theodor Schwann (1810-1882), introduced the cell theory by demonstrating in 1838 that animal and human tissues were composed of cells. Later in 1838, Muller published his magnum opus [2] on the microscopy and the genesis of cancer. Although he enunciated that tumor tissues have their analogous forms in normal tissues, he erroneously concluded that cancers developed not from normal cells in tissues, but from embryonic germ cells that are scattered among normal tissue elements. His limited experience in microscopic pathology is also shown by his conclusive statement that malignant tumors do not differ in their cellular composition from benign tumors. Muller with his faulty microscopic analysis of tumors left the impression to a whole generation of pathologists that the microscopic diagnosis of cancer was impossible.

Seven years after Theodor Schwann and Johannes Muller first described and illustrated human cells, Hermann Lebert (1813-1878), French pathologist, published the first microscopic pathology atlas. The atlas, with 249 figures, was printed as the third volume of his tome on clinical and experimental pathology [3]. With Lebert being an avid microscopist, it is difficult to understand his continuous support of Bichat's blastema theory in genesis of cells. Concerning origin of cancer, he went as far as claiming that cancer is cancer from the beginning. Then, he added that benign tumors such as myomas, fibromas, adenomas, polyps, and ovarian cysts have no proclivity to become malignant. Finally, despite his elaborate black and white illustrations of benign and malignant cells, Lebert seconded Johannes Muller's erroneous conclusion [2] that cancer cells resemble benign cells under the microscope.
Carl Rokitansky (1804-1878), Austrian pathologist, was the last exclusively gross pathologist and is remembered as the most illustrious autopsy pathologist. In his papers and pathology textbook [4], he never indicated a reason for not using microscope. He erroneously believed that the blastema theory was correct and that it was consistent with the cell theory because it explained the origin of cells from fibers. It is very telling that Rokitansky distinguished benign tumors from the malignant ones by the ultimate clinical outcome, not by their macroscopic or microscopic appearance. As an aside, Rokitansky attributed cerebral hemorrhage to a vacuum within the skull and hemorrhophilia (hemophilia) to preternaturally thin wall of vessels and watery condition of the blood.

The discipline of pathology in the United States was built on European experience. Samuel D. Gross (1805-1884) was the first real pathologist in the United States. After graduation from the Jefferson Medical College, he failed to obtain a surgical position in Philadelphia and relocated to Cincinnati to later become a dissector in anatomy and pathology at the Medical College of Ohio. Two years later, in 1835, he was appointed to the Chair of Pathological Anatomy in the same school. While translating French and German texts and writing his own book on gross pathology [5], he accepted the blastema theory and other faulty assumptions of the early 1800s. As professor and chairman of surgery in the University of Louisville from 1840 to 1856, he agreed with the cell theory but he held that the microscope was nothing more than an auxiliary laboratory instrument [6]. It is also odd that as a surgeon, Gross never believed that there was such a thing as puerperal sepsis, and he refused to accept Lister’s demonstration that wound infections were caused by bacteria.

James Ewing (1866-1943), of the Ewing’s sarcoma fame, was the first American surgical pathologist. He had an encyclopedic knowledge of all that was known about tumors. He blended together the literature on tumors and his personal experience in his seminal text, Neoplastic Diseases [10]. Ewing surrounded himself with oncologic surgeons, diagnostic radiologists, and radiation therapists; he later became the advocate for treating deeply located cancers on the ground of clinical and radiologic findings without a tissue biopsy. He feared that a tissue biopsy may contaminate the operative field with cancer cells and may lead to widespread metastases. For the same reason, he disapproved of an intraoperative frozen section. Ewing (as well as Virchow) believed in the role of inflammation and irritation in the etiology of cancer, however Ewing did not believe in the heredity of cancer.

After considering all of the above, it is perhaps fitting to repeat that without the scholarly contributions of the seven pathologists listed in this narrative, pathology would not have evolved into a vital and trustworthy medical specialty. On the other hand, they deserve to be castigated for never rescinding their erroneous statements.
References