Medical renal disease (including diabetic nephropathy, hypertensive disease, and transplant complications) has a large impact on the health care system in British Columbia, where currently almost 19,000 patients receive medical kidney care. The current gold standard for diagnosis of disease, assessment of disease for management, and assessment of treatment is kidney biopsy and pathology review. Medical renal pathology is imperfect, as different diseases have overlapping names and common histologic features, and diagnosis relies on pathologist interpretation. Similar to tumour pathology, medical kidney pathology has turned to molecular methods to determine disease pathophysiology and to improve our diagnostic ability with difficult cases. This talk will focus on the contributions of different molecular methods to the diagnosis and pathophysiology of antibody-mediated rejection in transplant kidney pathology and how this has translated into clinical practice.