Table S1: The detailed information of the datasets in reviewed papers.

Task	Data set	Cancer type	Scanner	Patch size	Annotation method	Pre-processing method
Classification [7]	227 WSIs	High-grade extrauterine serous carcinoma	Pannoramic SCAN 0.22 μm/pixel	/	Pixel-level annotation	/
Classification [8]	3212 WSIs	Gastric	Hamamatsu;Roche; KFBio; 20X	320 × 320	Pixel-level annotation	Data augmentation
Classification [9]	896 WSIs	Gastric	Nanozoomer 2.0-HT	224x224	Weak annotation(box)	Data augmentation

Classification [10]	4712 WSIs	Prostate	Pannoramic Flash II 250 (3DHistech, Hungary) scanner at a pixel resolution of 0.24μm	/	WSI-level	/
Gleason grading [11]	641 WSIs	Prostate	NanoZoomer-XR	224x224	Weak annotation	Data augmentation (rotations, flipping and color jittering)
Classification [19]	3470 WSIs	Breast	Carl Zeiss slide scanner, 40X resolution (0.249 microns per pixel)	224x224	WSI-level	Data augmentation (rotation, color spectrum augmentation1, color normalization)
Classification [23]	44,732 WSIs	Breast	Leica Aperio AT2 scanners at 20X equivalent magnification 0.5 μm per pixel	/	Weak annotation	/

Classification [25]	13,111 WSIs	Colorectal	KF-PRO-005 scanner 20X	300x300	Fine annotation	data augmentation (image zoom, flip, color change)
Classification [26]	7003 WSIs	Lung	Aperio scanner in either 20X (0.50 μm per pixel) or 40X magnification (0.25 μm per pixel)	224x224	WSI-level	Data augmentation (flipping,translation,rotation, and color augmentations)
Gleason grading [27]	1243 WSIs	Prostate	3DHistech Pannoramic Flash II 250 20X(0.24μm per pixel)	/	WSI-level	/
Classification [30]	1584 WSIs	Pan-Renal Cell Carcinoma	/	224x224	WSI-level	data augmentation techniques (random horizontal flip and random Crop)

Classification [31]	193 WSIs	Oral squamous cell carcinoma	Omnyx Integrated Digital Pathology system,40X 0.275μm per pixel	128x128	Weak annotation	data augmentation (random rotation and random flipping)
Classification [33]	9366 WSIs	Gastric	Jiangfeng scanner at 40X,0.2513μm per pixel; Hamamatsu scanner at 40X,0.2206μm per pixel	768x768	Fine annotation	Data standardization
Classification [34]	128 images	Prostate	NanoZoomer digital slide scanner 0.23μm per pixel	1024x1024	Fine annotation	Data augmentation (rotation, flip, normalization)
Segmentation [45]	54 WSIs	Lung	/	224x224	Weak annotation	/

Classification [49]	2323 WSIs	Lung	/	224x224	Fine annotation	Data augmentation (flipping, rotations, and shifts in brightness, contrast, hue, and saturation)
Classification [58]	717 WSIs	Prostate	Philips Ultra Fast Scanner, Panoramic 250 Flash II scanner, Olympus VS120-S5	/	Fine annotation	Data augmentation, Rescanning, style normalization
Classification [59]	100WSIs	Liver	20X,15X	/	Weak annotation	/
Classification [61]	422 WSIs	Lung	Leica Aperio whole-slide scanner at 20x	224x224	Fine annotation	Color normalization, data augmentation (rotation, flip)

Classification [66]	148 WSIs	Translocation renal cell carcinoma	Leica Aperio scanner at ×40	2000x2000	/	Color normalization
Gleason grading [71]	/	Lymph node, prostate	Ventana scanner of 0.25μm per pixel;Hamamatsu scanner of 0.23 μm per pixel	/	Fine annotation	Stain normalization
Prognostic [86]	/	Gliomas	/	1024x1024	/	Data augmentation (GAN)
Classification [90]	2647 patches	Cervical	/	256x128	Weak annotation	Data augmentation (GAN)

Detection [94]	3000 patches	Colorectal	Aperio ScanScope XT at 40X of 0.061μm per pixel	256x256	Fine annotation	/
Classification [95]	284 WSIs	Lung	BX53, Olympus Corporation at 40X	256x256	/	Data augmentation (rotation, flipping, and color correction,)
Segmentation [96]	1400 images	Gastric	/	512x512	Weak annotation	data augmented (horizontal flips, rotations, random crops and hue saturation value shifts)
Classification [98]	905 WSIs	Stomach	/	256x256	Fine annotation	Eliminate noises

Detection [99]	45 WSIs	Breast	Leica Aperio AT2 whole slide scanner at 20X of 0.5 μm per pixel.	64x64	Weak annotation	Data augmentation
Classification [100]	3554 WSIs	Lung	20X	512x512	Fine annotation	Data augmentation (flip, translation, color shift)
Classification [106]	5846 images	Melanoma	/	/	Box annotation	Data augmentation (horizontal flip, random distort, rotations, crop, zoom)
Classification [108]	400 WSI and 993WSIs	Kidney, lung	/	256x256	Fine annotation	/

| Classification [111] | 508 WSIs | Colorectal | Aperio AT2, Leica Biosystems at 40× resolution (0.25-μm pixel−1) | 224x224 | Fine annotation | Data augmentation (rotation, flip, color jitter on the brightness, contrast, saturation and hue of each image) |