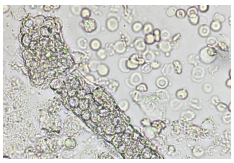
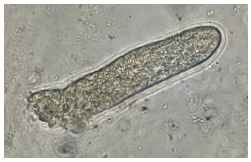
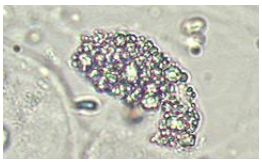
Urine casts: brightfield

Seven cast patterns, identifying features, and common look-alikes

Casts form in renal tubules in a uromodulin protein matrix. Identify the matrix first; loose cell clumps can mimic casts.

Brightfield: transparent casts have little contrast. Reduced illumination helps reveal their outline; phase contrast can clarify cell detail.

Photo	Cast and identifying feature	Association and look-alike
	**Hyaline** · 400× Pale matrix with parallel sides; faint edges can disappear in strong illumination.	Concentrated urine, exercise, or renal disease; a few may occur without disease. **Look-alike:** Mucus tapers and varies in width.
	**Red cell** · 400× Red cells held within a continuous matrix.	Bleeding within the nephron, especially from a glomerular source. **Look-alike:** Free red cell clumps have no enclosing cast matrix.
	**White cell** · 400× Granular white cells in a matrix. Nuclear lobes may be difficult to resolve.	Renal inflammation, including pyelonephritis and interstitial nephritis. **Look-alike:** Tubular cells or white cell clumps can resemble a cast.
	**Epithelial / white cell** · 400× The source labels this as an epithelial/white-cell cast. Indistinct nuclei limit cell typing.	Tubular injury or renal inflammation; the cast alone cannot establish the cause. **Look-alike:** White cell and tubular cell casts overlap; compare nuclei, not size alone.
	**Granular** · 400× Coarse or fine granules fill the matrix as cells and proteins break down.	Numerous muddy brown casts support tubular injury. A few granular casts are less specific. **Look-alike:** Debris or crystal clumps lack a continuous cast outline.
	**Fatty** · 400× Refractile lipid droplets within a matrix; some show Maltese crosses in polarized light.	Lipiduria, often with heavy proteinuria. **Look-alike:** Starch also forms crosses; confirm droplets within a cast.
	**Waxy** · 400× Highly refractile, sharply outlined matrix; cracks, notches, and blunt ends.	Prolonged tubular stasis, often with advanced renal impairment. **Look-alike:** Fibers have irregular edges and lack a cast matrix.

Scan low power; identify contents at higher power. Delay and dilute alkaline urine can destroy casts; centrifugation can break or lose them. Broad describes width, not contents. Interpret with other urine findings using the laboratory's reporting method.