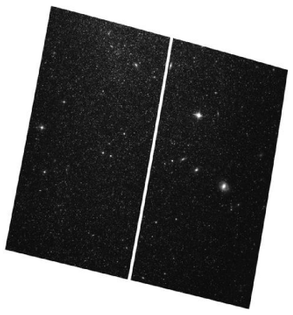
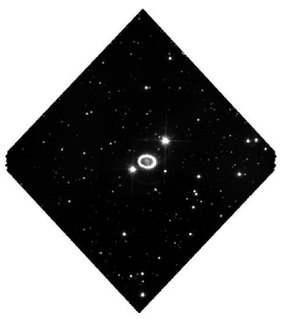
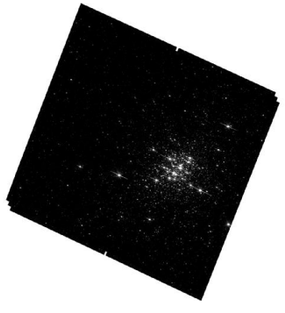
Image-to-Text Retrieval

Image	Top classes (fine-tuned)	Top classes (base)	Abstract
	1. dwarf galaxies 2. RR Lyrae variables 3. red giants 4. trans-Neptunian objects	1. high-redshift quasars 2. gravitational lensing 3. low surface brightness galaxies 4. white dwarfs	isolated dwarf galaxies, WLM, Pegasus Dwarf Irregular Galaxy, stellar mass, main sequence stars; understand growth of stellar mass in WLM and PegDIG, constrain effects of reionization, analyze radial population gradients, study variable star populations in WLM and PegDIG
	1. supernova remnants 2. protostars 3. galactic structure 4. core-collapse supernova	1. gravitational lensing 2. supernovae 3. binary star systems 4. circumstellar disks	supernova SN 1987A, circumstellar ring, supernova remnant, shocked ring, radioactive isotopes; determine mass loss of Sanduleak -69 202 progenitor, test ideas for SN 1987A progenitor, analyze shape of SN 1987A explosion, resolve inner debris of SN 1987A, reveal true extent of gas outside the ring
	1. galaxy clusters 2. lyman alpha 3. intracluster medium 4. dark energy	1. gravitational lensing 2. high-redshift quasars 3. ultra diffuse galaxies 4. galaxy clusters	X-ray luminous galaxy clusters, eMACS clusters, Balmer Break Galaxies, Lyman-break galaxies, gravitational telescopes; identify most powerful gravitational telescopes for future studies, constrain mass distribution within extreme systems, improve understanding of galaxy-galaxy and galaxy-gas interactions, unveil Balmer Break Galaxies at z~2, detect Lyman-break galaxies at z>6
	1. globular clusters 2. star clusters 3. galactic structure 4. crowded stellar field	1. star clusters 2. globular clusters 3. open clusters 4. stellar populations	pre-main sequence stars, Large Magellanic Cloud, young clusters, color-magnitude diagrams, main-sequence turn offs; disentangle between age and rotation in pre-MS stars, assess multiple bursts of star formation in young clusters, understand the eMSTO phenomenon, investigate the multiple stellar populations phenomenon, analyze the luminosity function of young clusters's Turn-On region