

Globular Clusters

A globular cluster is a spherical collection of stars that orbit a galactic core as a satellite. Globular clusters are very tightly bound by gravity, giving them their spherical shapes and relatively high stellar densities toward their centers. A globular cluster is sometimes known more simply as a globular.



Globular clusters, which are found in the halo of a galaxy, contain considerably more stars and are much older than the less dense open clusters, which are found in the disk. Globular clusters are fairly common; there are about 150 to 158 currently known globular clusters in the Milky Way, with perhaps 10 to 20 more still undiscovered. These globular clusters orbit the Galaxy at radii of 40 kiloparsecs (130,000 light-years) or more. Larger galaxies can have more: The Andromeda galaxy may have as many as 500 while giant elliptical galaxies, such as M87, may have as many as 13,000 globular clusters.

Every galaxy of sufficient mass in the Local Group has an associated group of globular clusters, and almost every large galaxy surveyed has been found to possess a system of globular clusters. The Sagittarius Dwarf galaxy and the disputed Canis Major Dwarf galaxy appear to be in the process of donating their associated globular clusters (such as Palomar 12) to the Milky Way, demonstrating how many of this galaxy's globular clusters might have been acquired in the past.

Although it appears that globular clusters contain some of the first stars to be produced in the galaxy, their origins and their role in galactic evolution are still unclear. It does appear clear that globular clusters are significantly different from dwarf elliptical galaxies and were formed as part of the star formation of the parent galaxy rather than as a separate galaxy. However, recent conjectures by astronomers suggest that globular clusters and dwarf spheroidals may not be clearly separate and distinct types of objects.

This list contains 135 of the brightest and largest globular clusters from the Astroleague's observing program/list.

Globular Cluster Types

| | |
|--------|---------------------------|
| b | Hub Globulars |
| o | Halo Globulars |
| r | Far Halo Globulars |
| m | Magellanic Globulars |
| x | External Globulars |
| (none) | Unknown/No Classification |

Catalogs

| | |
|-------|-------------------------------|
| Arp | Arp & Van den Bergh |
| Djorg | Djorgoski |
| ESO | European Southern Observatory |
| HP | Haute-Provence |
| IC | Index Catalog |
| M | Messier Catalog |
| N | New General Catalog (NGC) |
| Pal | Palomar Globulars |
| Rup | Ruprecht |
| Ter | Terzan Clusters |
| Ton | Tonantzintla |

Globular Clusters

| Object | Const | RA | Dec | Mag | Size | Type |
|----------|--------|-------------|------------|------|-------|------|
| N104 | Tuc | 00h 24m 05s | -72° 04.9' | 4.0 | 50' | o |
| N121 | In SMC | 00h 26m 47s | -71° 32.2' | 10.6 | 1.5' | m |
| N288 | Scl | 00h 52m 45s | -26° 35.0' | 8.1 | 13.0' | o |
| N362 | Tuc | 01h 03m 14s | -70° 50.9' | 6.8 | 14.0' | o |
| N1049 | For | 02h 39m 48s | -34° 15.5' | 12.6 | 1.3' | x |
| N1261 | Hor | 03h 12m 16s | -55° 13.0' | 8.3 | 6.8' | |
| Pal 1 | Cep | 03h 33m 21s | +79° 34.9' | 13.6 | 2.8' | |
| Pal 2 | Aur | 04h 46m 06s | +31° 22.9' | 13.0 | 2.2' | |
| N1851 | Col | 05h 14m 07s | -40° 02.8' | 7.1 | 12.0' | |
| M79 | Lep | 05h 24m 11s | -24° 31.5' | 7.7 | 9.6' | |
| N2298 | Pup | 06h 48m 59s | -36° 00.3' | 9.3 | 6.8' | |
| N2419 | Lyn | 07h 38m 08s | +38° 55.9' | 10.3 | 4.6' | |
| N2808 | Car | 09h 12m 03s | -64° 51.8' | 6.2 | 14.0' | o |
| ESO 37-1 | Cha | 09h 20m 56s | -77° 16.7' | 11.4 | | o |
| Pal 3 | Sex | 10h 05m 31s | +00° 04.3' | 13.9 | 1.6' | r |
| N3201 | Vel | 10h 17m 37s | -46° 24.7' | 6.9 | 20.0' | o |
| Pal 4 | Uma | 11h 29m 16s | +28° 58.4' | 14.2 | 1.3' | r |
| N4147 | Com | 12h 10m 06s | +18° 32.5' | 10.4 | 4.4' | r |
| N4372 | Mus | 12h 25m 47s | -72° 39.2' | 7.2 | 5.0' | o |
| Rup 106 | Cen | 12h 38m 39s | -51° 09.1' | 10.9 | 2.0' | r |
| M68 | Hya | 12h 39m 28s | -26° 44.6' | 7.3 | 11.0' | o |
| N4833 | Mus | 12h 59m 34s | -70° 52.5' | 8.4 | 13.5' | o |
| M53 | Com | 13h 12m 55s | +18° 10.1' | 7.7 | 13.0' | r |
| N5053 | Com | 13h 16m 27s | +17° 41.9' | 9.0 | 10.0' | r |
| N5139 | Cen | 13h 26m 46s | -47° 28.6' | 3.9 | 55.0' | o |
| M3 | Cvn | 13h 42m 11s | +28° 22.7' | 6.3 | 18.0' | o |
| N5286 | Cen | 13h 46m 27s | -51° 22.6' | 7.4 | 11.0' | o |
| N5466 | Boo | 14h 05m 27s | +28° 32.1' | 9.2 | 9.0' | r |
| N5634 | Vir | 14h 29m 37s | -05° 58.6' | 9.5 | 5.5' | r |
| N5694 | Hya | 14h 39m 36s | -26° 32.3' | 10.2 | 4.3' | r |
| IC 4499 | Aps | 15h 00m 19s | -82° 12.8' | 10.1 | 8.0' | r |
| N5824 | Lup | 15h 03m 59s | -33° 04.1' | 9.1 | 7.4' | r |
| Pal 5 | Ser | 15h 16m 05s | -00° 06.7' | 11.8 | 3.2' | r |
| N5897 | Lib | 15h 17m 24s | -21° 00.6' | 8.4 | 11.0' | o |
| M5 | Ser | 15h 18m 33s | -02° 05.0' | 5.7 | 23.0' | o |
| N5927 | Lup | 15h 28m 01s | -50° 40.4' | 8.0 | 6.0' | b |

| Object | Const | RA | Dec | Mag | Size | Type |
|---------|-------|-------------|------------|------|-------|------|
| N5946 | Nor | 15h 35m 29s | -50° 39.6' | 8.4 | 3.0' | o |
| N5986 | Lup | 15h 46m 03s | -37° 47.1' | 7.6 | 9.6' | b |
| Pal 14 | Her | 16h 10m 59s | +14° 57.5' | 14.7 | 2.1' | r |
| M80 | Sco | 16h 17m 02s | -22° 58.5' | 7.3 | 10.0' | b |
| M4 | Sco | 16h 23m 35s | -26° 31.5' | 5.4 | 36.0' | o |
| N6101 | Aps | 16h 25m 49s | -72° 12.0' | 9.2 | 7.6' | r |
| N6144 | Sco | 16h 27m 14s | -26° 01.3' | 9.0 | 9.3' | b |
| N6139 | Sco | 16h 27m 40s | -38° 50.9' | 9.1 | 8.2' | b |
| Ter 3 | Sco | 16h 28m 40s | -35° 20.6' | 12.0 | 3.0' | b |
| M107 | Oph | 16h 32m 32s | -13° 03.2' | 7.8 | 13.0' | b |
| M13 | Her | 16h 41m 41s | +36° 27.6' | 5.8 | 20.0' | o |
| N6229 | Her | 16h 46m 59s | +47° 31.7' | 9.4 | 4.5' | r |
| M12 | Oph | 16h 47m 14s | -01° 56.8' | 6.1 | 16.0' | b |
| N6235 | Oph | 16h 53m 25s | -22° 10.6' | 8.9 | 5.0' | b |
| M10 | Oph | 16h 57m 09s | -04° 06.0' | 6.6 | 20.0' | b |
| N6256 | Sco | 16h 59m 33s | -37° 07.3' | 11.3 | 4.1' | b |
| Pal 15 | Oph | 16h 59m 51s | -00° 32.5' | 14.2 | 4.2' | r |
| M62 | Oph | 17h 01m 13s | -30° 06.8' | 6.4 | 15.0' | b |
| M19 | Oph | 17h 02m 38s | -26° 16.1' | 6.8 | 17.0' | b |
| N6284 | Oph | 17h 04m 29s | -24° 45.9' | 8.9 | 5.6' | o |
| N6287 | Oph | 17h 05m 09s | -22° 42.5' | 9.3 | 5.1' | b |
| N6293 | Oph | 17h 10m 10s | -26° 34.9' | 8.3 | 7.9' | b |
| N6304 | Oph | 17h 14m 32s | -29° 27.7' | 8.3 | 6.8' | b |
| N6316 | Oph | 17h 16m 37s | -28° 08.4' | 8.1 | 4.9' | b |
| M92 | Her | 17h 17m 07s | +43° 08.8' | 6.5 | 14.0' | o |
| N6325 | Oph | 17h 17m 59s | -23° 46.0' | 10.2 | 4.1' | b |
| M9 | Oph | 17h 19m 12s | -18° 31.0' | 7.8 | 12.0' | b |
| N6342 | Oph | 17h 21m 10s | -19° 35.2' | 9.5 | 3.0' | b |
| N6355 | Oph | 17h 23m 58s | -26° 21.2' | 8.6 | 5.0' | b |
| N6356 | Oph | 17h 23m 35s | -17° 48.8' | 8.2 | 10.0' | o |
| IC 1257 | Oph | 17h 21m 08s | -07° 05.6' | 13.1 | 5.0' | r |
| N6352 | Ara | 17h 25m 29s | -48° 25.4' | 7.8 | 7.1' | b |
| N6366 | Oph | 17h 27m 44s | -05° 04.6' | 9.5 | 13.0' | o |
| Ter 2 | Sco | 17h 27m 33s | -30° 48.2' | 14.3 | 0.6' | b |
| HP 1 | Oph | 17h 31m 05s | -29° 59.0' | 12.5 | 1.2' | b |
| N6362 | Ara | 17h 31m 55s | -67° 02.9' | 8.1 | 10.7' | o |
| N6380 | Sco | 17h 34m 28s | -39° 04.2' | 11.5 | 3.9' | b |
| Ter 1 | Sco | 17h 35m 47s | -30° 28.9' | 15.9 | 2.4' | b |

| Object | Const | RA | Dec | Mag | Size | Type |
|---------|-------|-------------|------------|------|-------|------|
| Ton 2 | Sco | 17h 36m 11s | -38° 33.2' | 12.2 | 2.2' | b |
| N6388 | Sco | 17h 36m 17s | -44° 44.1' | 6.8 | 8.7' | b |
| N6401 | Oph | 17h 38m 37s | -23° 54.6' | 7.4 | 5.6' | b |
| M14 | Oph | 17h 37m 36s | -03° 14.8' | 7.6 | 11.0' | b |
| N6397 | Ara | 17h 40m 42s | -53° 40.4' | 5.3 | 31.0' | o |
| Pal 6 | Oph | 17h 43m 42s | -26° 13.4' | 11.6 | 7.2' | b |
| N6426 | Oph | 17h 44m 54s | +03° 10.2' | 10.9 | 4.2' | o |
| Ter 5 | Sgr | 17h 48m 05s | -24° 46.8' | 13.9 | 2.4' | b |
| N6440 | Sgr | 17h 48m 53s | -20° 21.6' | 9.3 | 5.4' | b |
| N6441 | Sco | 17h 50m 13s | -37° 03.1' | 7.2 | 7.8' | b |
| Ter 6 | Sco | 17h 50m 47s | -31° 16.5' | 13.9 | 1.4' | b |
| N6453 | Sco | 17h 50m 52s | -34° 35.9' | 10.2 | 3.5' | b |
| N6496 | Sco | 17h 59m 03s | -44° 15.9' | 8.6 | 6.9' | b |
| N6517 | Oph | 18h 01m 51s | -08° 57.5' | 10.1 | 4.0' | b |
| Djorg 2 | Sco | 18h 01m 49s | -27° 49.5' | 9.9 | 9.9' | b |
| Ter 10 | Sgr | 18h 02m 58s | -26° 04.0' | 14.9 | 1.5' | b |
| N6522 | Sgr | 18h 03m 35s | -30° 02.1' | 9.9 | 5.6' | b |
| N6535 | Ser | 18h 03m 51s | -00° 17.8' | 9.3 | 3.4' | b |
| N6539 | Ser | 18h 04m 50s | -07° 35.2' | 8.9 | 7.9' | b |
| N6528 | Sgr | 18h 04m 49s | -30° 03.4' | 9.6 | 3.7' | b |
| N6540 | Sgr | 18h 06m 09s | -27° 45.9' | 9.3 | 1.0' | b |
| N6544 | Sgr | 18h 07m 20s | -24° 59.9' | 7.5 | 8.9' | o |
| N6541 | Cra | 18h 08m 02s | -43° 42.9' | 6.3 | 15.0' | b |
| N6553 | Sgr | 18h 09m 17s | -25° 54.5' | 8.3 | 8.1' | b |
| N6558 | Sgr | 18h 10m 18s | -31° 45.8' | 8.6 | 3.7' | b |
| IC 1276 | Ser | 18h 10m 45s | -07° 12.8' | 10.3 | 8.0' | b |
| N6569 | Sgr | 18h 13m 38s | -31° 49.6' | 8.4 | 5.8' | b |
| N6584 | Tel | 18h 18m 38s | -52° 12.9' | 7.9 | 8.6' | o |
| N6624 | Sgr | 18h 23m 40s | -30° 21.5' | 7.6 | 5.9' | b |
| M28 | Sgr | 18h 24m 33s | -24° 52.2' | 6.9 | 11.2' | b |
| M69 | Sgr | 18h 31m 23s | -32° 20.9' | 7.7 | 7.1' | b |
| N6638 | Sgr | 18h 30m 56s | -25° 29.8' | 9.2 | 7.3' | b |
| N6642 | Sgr | 18h 31m 54s | -23° 28.5' | 8.9 | 4.5' | b |
| N6652 | Sgr | 18h 35m 46s | -32° 59.4' | 8.5 | 6.0' | b |
| M22 | Sgr | 18h 36m 24s | -23° 54.2' | 5.2 | 24.0' | b |
| Pal 8 | Sgr | 18h 41m 30s | -19° 49.6' | 10.9 | 5.2' | o |
| M70 | Sgr | 18h 43m 13s | -32° 17.5' | 7.8 | 8.0' | b |
| N6712 | Set | 18h 53m 04s | -08° 42.3' | 8.1 | 7.2' | b |

| Object | Const | RA | Dec | Mag | Size | Type |
|--------|-------|-------------|------------|------|-------|------|
| M54 | Sgr | 18h 55m 03s | -30° 28.7' | 7.7 | 9.1' | x |
| N6717 | Sgr | 18h 55m 06s | -22° 42.1' | 8.4 | 3.9' | b |
| N6723 | Sgr | 18h 59m 33s | -36° 37.9' | 6.8 | 11.0' | b |
| N6749 | Aql | 19h 05m 15s | +01° 54.1' | 12.4 | 6.3' | o |
| N6752 | Pav | 19h 10m 52s | -59° 58.9' | 5.3 | 29.0' | o |
| N6760 | Aql | 19h 11m 12s | +01° 01.9' | 9.0 | 9.6' | b |
| M56 | Lyr | 19h 16m 36s | +30° 11.1' | 8.4 | 7.1' | o |
| Ter 7 | Sgr | 19h 17m 44s | -34° 39.5' | 12.0 | 2.6' | x |
| Pal 10 | Sge | 19h 18m 02s | +18° 34.3' | 13.2 | 4.0' | o |
| Arp 2 | Sgr | 19h 28m 44s | -30° 21.2' | 12.3 | 2.3' | x |
| M55 | Sgr | 19h 40m 00s | -30° 57.7' | 6.3 | 19.0' | b |
| Ter 8 | Sgr | 19h 41m 44s | -34° 00.0' | 12.4 | 3.5' | x |
| Pal 11 | Aql | 19h 45m 14s | -08° 00.4' | 9.8 | 10.0' | o |
| M71 | Sge | 19h 53m 46s | +18° 46.7' | 8.4 | 7.2' | o |
| M75 | Sgr | 20h 06m 05s | -21° 55.3' | 8.6 | 6.8' | o |
| N6934 | Del | 20h 34m 11s | +07° 24.3' | 8.9 | 7.1' | o |
| M72 | Aqr | 20h 53m 28s | -12° 32.2' | 9.2 | 6.6' | o |
| N7006 | Del | 21h 01m 29s | +16° 11.2' | 10.6 | 3.6' | r |
| M15 | Peg | 21h 29m 58s | +12° 10.0' | 6.3 | 18.0' | o |
| M2 | Aqr | 21h 33m 27s | -00° 49.4' | 6.6 | 16.0' | o |
| M30 | Cap | 21h 40m 22s | -23° 10.7' | 6.9 | 12.0' | o |
| Pal 12 | Cap | 21h 46m 39s | -21° 15.1' | 11.7 | 2.9' | r |
| N7492 | Aqr | 23h 08m 27s | -15° 36.6' | 11.2 | 42' | r |

Globular Cluster Observing Log (1)

| Object | Date | Object | Date |
|----------|------|---------|------|
| N104 | | M5 | |
| N121 | | N5927 | |
| N288 | | N5946 | |
| N362 | | N5986 | |
| N1049 | | Pal 14 | |
| N1261 | | M80 | |
| Pal 1 | | M4 | |
| Pal 2 | | N6101 | |
| N1851 | | N6144 | |
| M79 | | N6139 | |
| N2298 | | Ter 3 | |
| N2419 | | M107 | |
| N2808 | | M13 | |
| ESO 37-1 | | N6229 | |
| Pal 3 | | M12 | |
| N3201 | | N6235 | |
| Pal 4 | | M10 | |
| N4147 | | N6256 | |
| N4372 | | Pal 15 | |
| Rup 106 | | M62 | |
| M68 | | M19 | |
| N4833 | | N6284 | |
| M53 | | N6287 | |
| N5053 | | N6293 | |
| N5139 | | N6304 | |
| M3 | | N6316 | |
| N5286 | | M92 | |
| N5466 | | N6325 | |
| N5634 | | M9 | |
| N5694 | | N6342 | |
| IC 4499 | | N6355 | |
| N5824 | | N6356 | |
| Pal 5 | | IC 1257 | |
| N5897 | | N6352 | |

Globular Cluster Observing Log (2)

| Object | Date | Object | Date |
|---------|------|--------|------|
| N6366 | | N6624 | |
| Ter 2 | | M28 | |
| HP 1 | | M69 | |
| N6362 | | N6638 | |
| N6380 | | N6642 | |
| Ter 1 | | N6652 | |
| Ton 2 | | M22 | |
| N6388 | | Pal 8 | |
| N6401 | | M70 | |
| M14 | | N6712 | |
| N6397 | | M54 | |
| Pal 6 | | N6717 | |
| N6426 | | N6723 | |
| Ter 5 | | N6749 | |
| N6440 | | N6752 | |
| N6441 | | N6760 | |
| Ter 6 | | M56 | |
| N6453 | | Ter 7 | |
| N6496 | | Pal 10 | |
| N6517 | | Arp 2 | |
| Djorg 2 | | M55 | |
| Ter 10 | | Ter 8 | |
| N6522 | | Pal 11 | |
| N6535 | | M71 | |
| N6539 | | M75 | |
| N6528 | | N6934 | |
| N6540 | | M72 | |
| N6544 | | N7006 | |
| N6541 | | M15 | |
| N6553 | | M2 | |
| N6558 | | M30 | |
| IC 1276 | | Pal 12 | |
| N6569 | | N7492 | |
| N6584 | | | |