**Table S1.** List of studies and their autophagy-monitoring methods (listed by publication year).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Methods for monitoring autophagy** | | | | | | | | |  |
| **Autophagy modulators** | **Autophagosome quantification** | **Biochemical changes** | **Autophagy substrate degradation** | **Autophagic flux assays** | **Lysosome assays** | **Drug targets** | **Pharmacological effects** | **Cell lines** | ***In vivo* models** | **Ref.** |
| Turpentine/inhibitor | TEM for autophagic vesicles↓ |  |  |  |  |  | RNA breakdown regulation |  | Rat | [1] |
| Glucose/inducer | TEM for autophagic vesicles |  |  |  |  |  |  | Yeast |  | [2] |
| Ethionine/inhibitor |  |  | LDH sequestration↓ |  | Arylsulfatase and CTSB activity |  |  |  | Rat | [3] |
| Arsenic trioxide/inducer |  |  |  |  |  |  | Cell cycle arrest (use BAF) | U373-MG |  | [4] |
| Dopamine/inducer | TEM for autophagic vesicles↑ |  |  | Autophagosome biogenesis inhibition assay |  |  | Neurotoxicity (use 3-MA) | SH-SY5Y |  | [5] |
| Resveratrol/inducer | TEM for autophagic vesicles↑ |  |  |  |  |  |  | A2780, CaOV3 |  | [6] |
| Soybean B-group triterpenoid saponins/inducers | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer | HCT-15 |  | [7] |
| Arsenic trioxide/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ |  |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | U373-MG, U87-MG, T98G |  | [8] |
| Lithium/inducer | LC3 staining↑ | LC3 lipidation↑ | Aggregation-prone protein degradation | Autophagic cargo flux assay |  | Non-canonical autophagic pathway | Neuroprotection, mutant SNCA/α-synuclein clearance (use 3-MA) | COS-7 |  | [9] |
| Sulforaphane/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | PC-3, LNCaP |  | [10] |
| Oligomycin A/inducer | TEM for autophagic vesicles↑ |  |  |  |  |  |  | IPLB-LdFB |  | [11] |
| Plumbagin/inducer | TEM for autophagic vesicles↑ |  |  |  |  | AKT-MTOR inhibition | Anti-cancer (*BECN1*/ *Beclin 1* KD) | MCF-7, MDA-MB-231 |  | [12] |
| Metformin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AMPK | Anti-cancer | HCT116 | Mice | [13] |
| Imatinib/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay | LAMP1 staining and protein level |  |  | N2a, SN56, GT1, COS-7, CHO, C2C12, NIH3T3, A549, HFF |  | [14] |
| 1L-6-Hydroxymethyl-chiro-inositol 2(R)-2-O-methyl-3-O-octadecylcarbonate/inducer | GFP-LC3↑ |  |  |  |  | AKT-MTOR inhibition | Anti-cancer | U87-MG, U87MGEGFR |  | [15] |
| Avicin D/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | GFP-LC3 lysosomal delivery and proteolysis |  | AKT-MTOR inhibition | Anti-cancer (use CQ and *ATG5*&*7* KD) | U-2 OS, MDA-MB-231, T47D, A549, SKOV3, PC3 |  | [16] |
| SMERs/inducers | GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay |  | Non-canonical autophagic pathway | Neuroprotection, mutant SNCA/α-synuclein and HTT (huntingtin) clearance (*ATG5* KD) | PC12, COS-7, MEFs, HeLa |  | [17] |
| Oridonin/inducer |  | LC3 lipidation↑ |  |  |  |  |  | HeLa |  | [18] |
| Oleandrin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT |  | PANC-1 |  | [19] |
| Magnolol/inducer |  |  |  |  |  |  | Anti-cancer | H460 |  | [20] |
| Trehalose/inducer | GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay |  | Non-canonical autophagic pathway | Neuroprotection, mutant SNCA/α-synuclein and HTT (huntingtin) clearance (*ATG5* KD) | PC12, COS-7, SK-N-SH, HeLa |  | [21] |
| FDA-approved drugs | GFP-LC3↑ | LC3 lipidation, FYVE-RFP | Long-lived proteins degradation |  |  | MTOR |  | H4 |  | [22] |
| Vitamin K2/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA and *ATG7* KD) | HL-60*neo*, HL-60*bcl*-2 |  | [23] |
| Voacamine/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA and *ATG5*,*6*&*7* KD) | U-2 OS/WT |  | [24] |
| Suberoylanilide hydroxamic acid/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use wortmannin, LY294002) | HeLa S3 |  | [25] |
| Eupalinin A/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | HL60 |  | [26] |
| Siramesine/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | Long-lived proteins degradation↑ | Autophagosome biogenesis inhibition assay | LysoTracker, LAMP2 and CTSD protein levels, LAMP2 staining | Lysosomal function impairment | Protective autophagy (use 3-MA) | MCF-7 |  | [27] |
| Rottlerin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | HT1080 |  | [28] |
| Cysmethynil/inducer | LC3 staining↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR | Anti-cancer (use 3-MA and *ATG5* KD) | PC3 |  | [29] |
| Manumycin A, FTI-276, lonafarnib/inducers | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | MTOR inhibition |  | Panc-1, U-2 OS |  | [30] |
| Okadaic acid/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  | LysoTracker, CTSD protein level | BECN1 activation | Anti-cancer (use 3-MA) |  | Rat | [31] |
| Timosaponin A-III/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA and *BECN1* KD) | HeLa, HepG2, SUNE-1 |  | [32] |
| STF-62247/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA and *ATG5*,*7*&*9* KD) | RCC4, RCC4/VHL |  | [33] |
| Vitamin D3/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | MTOR inhibition | Anti-cancer (use BAF) | HL-60 |  | [34] |
| Clonidine, minoxidil, verapamil/inducers | GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay |  |  | Neuroprotection, mutant SNCA/α-synuclein and HTT (huntingtin) clearance (*ATG5* KD) | PC12, SK-N-SH, HeLa |  | [35] |
| Caffeine/inducer | GFP-LC3↑ |  | Long-lived proteins degradation↑ |  |  |  |  | Yeast |  | [36] |
| MG132/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  |  | HT-29 |  | [37] |
| Platonin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | Non-canonical autophagic pathway | Anti-cancer (use 3-MA) | U937, HL-60, K562, NB4, THP-1 |  | [38] |
| Safingol/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer | HCT-116 |  | [39] |
| Lithium, lithium carbonate, lithium bromide/inducers | LC3 staining↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay | LAMP1 staining |  | Neuroprotection, prion protein clearance (use 3-MA and *ATG5* KO) | RML-N2a, MEF |  | [40] |
| Resveratrol/inhibitor | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  |  | NIH/3T3, HEK293 |  | [41] |
| Perhexiline, niclosamide, amiodarone, rottlerin/inducers | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, GFP-LC3 lysosomal delivery and proteolysis |  | MTORC1 inhibition |  | MCF-7 |  | [42] |
| Spermidine/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker |  | Longevity promotion (*BECN1* KD) | HeLa, yeast | *C. Elegans* | [43] |
| Valproic acid/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | U87MG, SF295, T98G |  | [44] |
| Dexamethasone/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA, LY294002 and *BECN1* KD) | RS4;11, 697, ACC 389, 183E95, human primary lymphoblasts |  | [45] |
| Pyrazole-5-carbohydrazide N-glycosides/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  |  | Anti-cancer | A549 |  | [46] |
| Dasatinib/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer | U87/EGFR, U251 |  | [47] |
| FK228/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | AIF (apoptosis inducing factor) translocation | Anti-cancer | KP-MRT-NS | Mice | [48] |
| Vitamin D3/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LysoTracker | Cathelicidin |  | THP-1, RAW 264.7, human primary monocytes |  | [49] |
| Bortezomib/inhibitor | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑, long-lived protein degradation↓ | LC3-II turnover assay | CTSB&L activity |  | Anti-cancer | MCF-7, T-47D |  | [50] |
| 17-AAG/inducer | LC3 staining↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay |  |  | Neuroprotection, mutant SNCA/α-synuclein clearance (use CQ) | OLN-A53T |  | [51] |
| Glucosamine/inducer | LC3 staining↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay |  | Non-canonical autophagic pathway | Neuroprotection, polyglutamine clearance | HeLa, COS7, PC12 |  | [52] |
| Resveratrol/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ |  |  | AKT-MTOR inhibition | Anti-cancer (use BAF and *ATG5*, *LC3* KD) | K562, IM-R K562 |  | [53] |
| 5-FU/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ |  |  |  |  | MTOR inhibition | Anti-cancer (use 3-MA) | HCT116 |  | [54] |
| Gangliosides/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (*ATG6*&*7* KD) | U87MG, C6 |  | [55] |
| Autophagonizer/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker |  | Anti-cancer (use 3-MA, wortmannin) | COS7 |  | [56] |
| Bafilomycins/inhibitors | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, GFP-LC3 lysosomal delivery and proteolysis |  |  |  | MCF-7 |  | [57] |
| Bortezomib/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | HUVECs |  | [58] |
| Morphine/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay | LAMP3 staining |  | Anti-cancer | SH-SY5Y | Rat | [59] |
| Ascorbate/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  |  | MIA PaCa-2 |  | [60] |
| Vitamin E/inducer |  | LC3 lipidation↑ | Valine release↑ |  |  |  |  | Rat primary hepatocytes, H-4-II-E |  | [61] |
| Resveratrol/inducer | GFP-LC3↑ |  |  |  |  |  |  | U373 |  | [62] |
| ABC294640/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *ATG7* KD) | A-498 |  | [63] |
| Hirsutanol A/inducer |  | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | Hep3B |  | [64] |
| Carbamazepine/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Hepatic protection, SERPINA1/α1-antitrypsin Z clearance (*ATG5* KO) | HTO/Z | Mice | [65] |
| GX15-070/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR | Anti-cancer (use 3-MA and CQ) | EC9706, U-2 OS |  | [66] |
| Fisetin/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use CQ and *BECN1* KD) | PC3 |  | [67] |
| Glucosamine/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | U87MG, MDA-MB-231 |  | [68] |
| Rhabdastrellic acid-A/inducer | TEM for autophagic vesicles↑, YFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *ATG5* KD) | Hep3B, A549 |  | [69] |
| Paeoniflorin/inducer |  | LC3 lipidation↑ |  |  | LAMP2a protein level |  | Neuroprotection | PC12 |  | [70] |
| Trehalose/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓, Aggregation-prone protein degradation↑ |  | LAMP2 protein level |  | Neuroprotection, tau clearance |  | Mice | [71] |
| Sodium nitroprusside/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use wortmannin) | U-2 OS |  | [72] |
| N-acetyl cysteine, vitamin E/inhibitors | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  | MTOR | Cytotoxic effect | HeLa, COS-7, mice primary cortical neurons | *Drosophila*, zebrafish, mice | [73] |
| N10-substituted phenoxazine/inducer | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, mCherry-GFP-LC3, autophagic cargo flux assay |  | Non-canonical autophagic pathway | Neuroprotection, mutant HTT (huntingtin) clearance (use BAF) | Rat primary neurons |  | [74] |
| Clarithromycin | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  | LysoTracker | AKT-MTOR | Anti-cancer | 12PE, human primary myeloma cells |  | [75] |
| Glucocorticoid/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA) | MLO-Y4, chicken primary osteocytes |  | [76] |
| Tephrosin/inducer |  | LC3 lipidation↑ |  |  |  |  | Anti-cancer | A549 |  | [77] |
| Dasatinib/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AKT-MTOR inhibition | Anti-cancer (*BECN1* and *ATG12* KD) | HEY, SKOv3 | Mice | [78] |
| Benzoxazine derivatives/inducers | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR |  | HUVECs |  | [79] |
| Sodium arsenite/inducer |  |  |  |  | LysoTracker, TFEB and LAMP2&3 mRNA levels, CTSD activity |  |  | GM18504, GM18532 |  | [80] |
| Arsenic trioxide/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Anti-cancer | T80/HEY, SKOV3 |  | [81] |
| Cetuximab/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *BECN1*, *ATG7* KD) | A431, HCC827, DiFi |  | [82] |
| AZD8055/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | AKT-MTOR inhibition |  | H838, A549 |  | [83] |
| Apogossypolone/inducer | TEM for autophagic vesicles↑, LC3 staining↑ |  |  |  |  |  | Anti-cancer (use 3-MA) | PC-3. LNCaP |  | [84] |
| Gefitinib, erlotinib/inducers | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  | LysoTracker | AKT-MTOR inhibition | Anti-cancer (use CQ and *ATG5*&*7* KD) | A549, H1299 |  | [85] |
| (-)-gossypol/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | BECN1-BCL2 interaction | Anti-cancer (use 3-MA and *BECN1*, *ATG5* KD) | AI, AD LNCap, AI DU-145, CA-2B | Mice | [86] |
| Harmol/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | Non-canonical autophagic pathway | Anti-cancer (use 3-MA and *LC3* KD) | A549 |  | [87] |
| Compound C/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | Non-canonical autophagic pathway | Protective autophagy | U251 |  | [88] |
| ARP101/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA) | MCF-7, SH-SY5Y, HCT116 |  | [89] |
| Minocycline/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *BECN1*, *ATG5* KD) | C6 | Mice | [90] |
| Spermidine, resveratrol/inducers | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, GFP-LC3 lysosomal delivery and proteolysis |  | Non-canonical autophagic pathway |  | HCT116 | *C. elegans*, mice | [91] |
| Lucanthone/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | CTSD protein and mRNA levels |  | Anti-cancer (*ATG7* KD) | MDA-MB-231 |  | [92] |
| Trichostatin A/inhibitor | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Cardiac hypertrophy alleviation | Mice primary myocytes | Mice | [93] |
| Zoledronic acid/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | PC3, CWR22Rv1, LNCaP |  | [94] |
| Maprotiline, fluoxetine/inducers | TEM for autophagic vesicles↑ |  |  |  |  |  | Anti-cancer (use 3-MA and BAF) | DG-75 |  | [95] |
| Propionate, butyrate/inducers | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay | LysoTracker, LAMP2 staining | AKT-MTOR inhibition | Anti-cancer (use 3-MA, CQ and *ATG5*&*7* KD) | HCT116, SW480 |  | [96] |
| Bisphosphonates/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer | PC3, HepG2, MDA-MB-231&468 |  | [97] |
| Cilengitide/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA, BAF and *BECN1* KD) | U251, U87 | Mice | [98] |
| Quercetin/inducer | GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  |  |  | AKT-MTOR inhibition | Protective autophagy (use CQ and *BECN1*, *ATG5* KD) | AGS, MKN28 |  | [99] |
| Atorvastatin/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | LC3 transcription activation | Anti-cancer | PC3, HEK293 |  | [100] |
| Gö6976, Jak3 inhibitor VI, KU55933/inhibitors | GFP-LC3↑ | LC3 lipidation↑, GFP-2×FYVE↓ | SQSTM1/p62 protein level↑ | LC3-II turnover assay |  | PtdIns3K inhibition | Anti-cancer (use 3-MA and *ULK1* KD) | MCF-7, HeLa, U-2 OS |  | [101] |
| Thrombin/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  | CTSD protein level |  | Cell death (use 3-MA) | Rat primary astrocytes | Rat | [102] |
| SMER28/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Neuroprotection, Aβ/APP-CTF clearance (*ULK1*, *BECN1*, *ATG5*&*7* KD) | N2a-APP |  | [103] |
| 1α,25-dihydroxycholecalciferol/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LysoTracker |  | HIV-1 replication inhibition (*ATG5*&*BECN1* KD) | PBMC of HIV-1 seronegative donors |  | [104] |
| Azithromycin/inhibitor | mCherry/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mCherry-GFP-LC3 | Lysosomal pH |  | Mycobacterial infection | HeLa, primary macrophages of cystic fibrosis humans |  | [105] |
| Caffeine/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay | LAMP2 staining | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *ATG7* KD) | SH-SY5Y, PC12D, HeLa |  | [106] |
| RSVA314&405/inducers | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Neuroprotection, Aβ clearance | APP-HEK293, SwAPP-N2a |  | [107] |
| Calcipotriol/inducer | GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  | LC3-II turnover assay |  |  |  | HeLa, keratinocytes, HEK001, NHK |  | [108] |
| Metformin/inducer | TEM for autophagic vesicles↑, RFP-LC3↑ | LC3 lipidation↑ |  |  |  | MTOR inhibition | Anti-cancer (*LC3* and *ATG7* KD) | A375, SKMel28 | Mice | [109] |
| MG-2477/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker | AKT-MTOR inhibition | Anti-cancer (use 3-MA and BAF) | A549 |  | [110] |
| Nitazoxanide/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, GFP-LC3 lysosomal delivery and proteolysis |  | MTORC1 inhibition | *Tuberculosis* proliferation inhibition | MCF-7 |  | [111] |
| Bortezomib/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | MAPK/JNK activation |  | UMSCC-1&22A, 1483 |  | [112] |
| Corynoxine B /inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3, autophagic cargo flux assay | LysoTracker | BECN1 | Neuroprotection, mutant SNCA/α-synuclein clearance (use 3-MA and CQ) | N2a, PC12, SH-SY5Y, mice primary cortical neurons | *Drosophila* | [113] |
| IM23b/inducer |  | LC3 lipidation↑ |  |  |  |  |  | MCF-7 |  | [114] |
| Cucurbitacin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LAMP1 staining | ROS production, MAPK/ERK and MAPK/JNK activation | Protective autophagy (use 3-MA, wortmannin and *BECN1*, *ATG5* KD) | HeLa, MCF-7, HCT116, U87, MEFs |  | [115] |
| Perifosine/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use CQ) | K562, Kasumi-1 |  | [116] |
| Methylthioninium chloride/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓, Aggregation-prone protein degradation↑ | LC3-II turnover assay, mRFP-GFP-LC3 | CTSD protein level | AKT-MTOR inhibition | Neuroprotection, tau clearance | Organotypic slice cultures, mice primary neurons, CHO | Mice | [117] |
| Atorvastatin/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AMPK-MTOR | Cytoprotective function (use 3-MA) | MSCs |  | [118] |
| Lys05/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LysoTracker, LAMP2 protein level | Lysosome deacidification | Anti-cancer | LN229 | Mice | [119] |
| SD118-xanthocillin X (1)/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | MAP2K/MEK- MAPK/ERK and MTOR inhibition | Anti-cancer (use 3-MA) | HepG2 |  | [120] |
| Dimethyl sulfoxide/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay | RFP-LAMP1 | ATF4 (activating transcription factor 4)-AKT1 | Hepatic protection, lipid accumulation clearance (use 3-MA) | HepG2 |  | [121] |
| Atazanavir/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker, LAMP2 staining |  | Cell death | SW872 |  | [122] |
| ZnPPIX/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay, mRFP-mWasabi-LC3 |  | Non-canonical autophagic pathway | Anti-cancer | HeLa |  | [123] |
| Rottlerin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (*BECN1* and *ATG7* KD) | Human pancreatic CSCs |  | [124] |
| Sertindole/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay | LysoTracker |  | Anti-cancer (*ATG5* KD) | SH-SY5Y |  | [125] |
| α-TEA/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (*ATG12* KD) | 3LL, 4T1 | Mice | [126] |
| Palmitic acid/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation |  | LC3-II turnover assay |  | Non-canonical autophagic pathway | Anti-cancer (use CQ, *ATG5* KO, *ATG7* KD) | MEFs, HepG2 |  | [127] |
| Matrine/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑, ATG12–ATG5 conjugation | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LysoTracker, CTSB, D&L protein levels, LAMP1 staining | Cathepsins trafficking and activation inhibition |  | SGC7901, HeLa, BGC823, AGS |  | [128] |
| Andrographolide/inhibitor | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, RFP-GFP-LC3 | LysoSensor, CTSB&L activity and protein levels, LAMP1 staining | Autophagosome-lysosome fusion inhibition | Anti-cancer | MEFs, HCT116, HeLa, MCF-7 |  | [129] |
| Metformin//inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | MTOR inhibition | Anti-cancer (use 3-MA) | Daudi, Jurkat |  | [130] |
| GTM-1/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker | Non-canonical autophagic pathway | Neuroprotection, Aβ clearance (use 3-MA) | SH-SY5Y, MC65 |  | [131] |
| Curcumin/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AMPK activation | Anti-cancer (use 3-MA) | A549 |  | [132] |
| 3‐Nitropropionic acid/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  |  |  | SH-SY5Y |  | [133] |
| Evodiamine/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Protective autophagy (use 3-MA) | LLC | Mice | [134] |
| Ophiopogonin B/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer | H157, H460 |  | [135] |
| Benzyl isothiocyanate/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Protective autophagy (use 3-MA) | Rv1, PC3 |  | [136] |
| Sorafenib/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | AKT-MTOR inhibition | Cytoprotective function (use 3-MA) | MDDCs |  | [137] |
| 3-MA derivatives/inhibitors | LC3 staining↓ | LC3 lipidation↓, GFP-ZFYVE1↓ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  |  | NRK |  | [138] |
| Melatonin/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Treatment for granular corneal dystrophy type 2 (use 3-MA and BAF) | PQ, HO |  | [139] |
| Pterostilbene/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Cytoprotective function (*ATG5* KD) | HUVECs |  | [140] |
| Sulindac sulfide amide/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑, mRFP-GFP-LC3 | SQSTM1/p62 protein level↓ | LC3-II turnover assay | Lyso-ID | AKT-MTOR inhibition | Anti-cancer (*ATG7* KD) | A549, H1299 |  | [141] |
| DHEA, EPEA/inducers | LC3 staining↑ | BECN1-Bcl2 interaction↓ |  |  |  |  | Anti-cancer | MCF-7 |  | [142] |
| Nilotinib/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AMPK activation | Anti-cancer (use 3-MA and HCQ) | Huh-7, Hep3B, PLC5 | Mice | [143] |
| Saikosaponin-d/inducer | GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | CAMK2/CaMKK (calcium/calmodulin dependent protein kinase II)-AMPK-MTOR activation | Anti-cancer (use 3-MA and *ATG7* KD) | HeLa, MCF-7 |  | [144] |
| Cadmium/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Protective autophagy (use CQ and rapamycin) | PC12 |  | [145] |
| H89/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | Non-canonical autophagic pathway |  | NG108-15 |  | [146] |
| Salinomycin/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay | LysoTracker |  | Anti-cancer (use CQ and *ATG5* KD) | PC3, SKBR-3, MDA-MB-468 |  | [147] |
| Erlotinib/inducer |  | LC3 lipidation↑, ATG12–ATG5 conjugation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | MTOR inhibition | Anti-cancer (*BECN1* and *ATG5* KD) | HCC827, HCC4006, H358, H1975 |  | [148] |
| Thymoquinone/inhibitor |  | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay |  |  | Anti-cancer (use z-VAD-FMK) | U87MG, Gli36(EGFR) |  | [149] |
| Manzamine A/inhibitor |  | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LysoSensor, V-ATPase staining | V-ATPase uncoupling |  | AsPC-1, PANC-1, BxPC-3, MIA PaCa-2 |  | [150] |
| Piperlongumine/inducer | TEM for autophagic vesicles↑, GFP/mCherry-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation |  | LC3-II turnover assay |  | MAPK/p38 signaling | Anti-cancer (*ATG5* KO) | U-2 OS, HeLa, MEFs |  | [151] |
| Onjisaponin B/inducer | GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, autophagic cargo flux assay |  | MTOR inhibition | Neuroprotection, mutant SNCA/α-synuclein and HTT (huntingtin) clearance (*ATG7* KO) | PC12 |  | [152] |
| Dichloroacetate/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  | Autophagosome biogenesis inhibition assay |  | CTSD-thioredoxin-like protein 1, AKT-MTOR signaling | Protective autophagy (use 3-MA and *ATG7* KD) | LoVo |  | [153] |
| Palmitate/inducer |  | LC3 lipidation↑ |  |  |  | ER stress and MAPK/JNK activation | Anti-cancer (use 3-MA) | MIN6 |  | [154] |
| BIX-01294/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay, GFP-LC3 lysosomal delivery and proteolysis |  | EHMT2/G9a (euchromatic histone lysine methyltransferase 2) dysfunction and ROS production | Anti-cancer (use 3-MA and *BECN1*, *ATG5*&*7* KD) | MCF-7, SKBr3, HCT116, human primary colon and breast cancer cells |  | [155] |
| Ursolic acid/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA and *ATG5* KO) | TC-1 |  | [156] |
| Rottlerin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and BAF) | Human breast CSCs |  | [157] |
| Simvastatin/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay | LysoTracker |  | Cell death (use 3-MA and *ATG7* KD) | Coronary arterial myocytes | Mice | [158] |
| Trehalose/inducer | mCherry/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | mCherry-GFP-LC3 |  | Non-canonical autophagic pathway | Neuroprotection, amyotrophic lateral sclerosis treatment (use 3-MA and BAF) | NSC34, mice primary astrocytes | Mice | [159] |
| Leucettine L41/inducer | LC3 staining↑, mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  | MTOR inhibition |  | U-2 OS, HT22 |  | [160] |
| Tat-Beclin 1/inducer | TEM for autophagic vesicles | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  | LAMP1 protein level and staining | BECN1 | Cell death (use 3-MA, BAF and *BECN1* KD) | HeLa, U-2 OS |  | [161] |
| Tenovin-6/inhibitor | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay |  |  | Anti-cancer | CCL cells |  | [162] |
| CPTH6/inhibitor | TEM for autophagic vesicles, mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 | LAMP2 protein level and staining, CTSB&D protein levels | Autophagosome-lysosome fusion inhibition |  | U-937, HL-60, SKOV-3, OVCA 433, H1299, H460, M14 |  | [163] |
| Tat-Beclin 1/inducer | TEM for autophagic vesicles, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓, long-lived protein degradation↑, Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, autophagic cargo flux assay |  | BECN1, GLIPR2/GAPR-1 (GLI pathogenesis related  2) | Cytoprotective function, mutant HTT (huntingtin) clearance, HIV-1 replication inhibition (*ATG5* KD) | MCF-7, MEFs, HeLa, COS-7 | Mice | [164] |
| Hydrazinobenzoylcurcumin/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  | LysoTracker |  | Anti-cancer | A549 |  | [165] |
| Piperlongumine/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use CQ) | 786, PC-3, MCF-7 |  | [166] |
| Tanshinone IIA/inducer | LC3 staining↑ | LC3 lipidation |  |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | KBM-5, PC-3, U266, H460, MDA-MB-231 |  | [167] |
| 3-BrPA/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA, CQ and *ATG7* KD) | MDA-MB-231&435 |  | [168] |
| Trehalose/inducer | LC3 staining↑ | LC3 lipidation↑, ATG12–ATG5 conjugation | SQSTM1/p62 protein level↓ |  |  | Non-canonical autophagic pathway | Cytoprotective function |  | Mice | [169] |
| Gefitinib/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AMPK | Anti-cancer (use 3-MA and *ATG5* KD) | H460, Calu6 |  | [170] |
| Cucurbitacin I/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | MTOR inhibition | Protective autophagy (use CQ) | U251, T98G | Mice | [171] |
| 2’-hydroxychalcones/inducer | LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer | A549 |  | [172] |
| Spautin-1/inhibitor |  | LC3 lipidation↑, ATG12–ATG5 conjugation |  |  |  | AKT-GSK3B (glycogen synthase kinase 3 beta) |  | K562 |  | [173] |
| Perfluorooctane sulfonate/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LAMP1 staining |  | Anti-cancer (use 3-MA) | HepG2 |  | [174] |
| Oblongifolin C/inhibitor | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑, DQ-BSA | LC3-II turnover assay | LysoTracker, LAMP1 staining, CTSB&D protein levels | Autophagosome-lysosome fusion inhibition, lysosome deacidification | Anti-cancer (*ATG5*&*7* KD) | HeLa, MEFs, HepG2, CNE, HCT116, MCF-7, MDA-MB-231 | Mice | [175] |
| Corynoxine/inducer | GFP-LC3↑ | LC3 lipidation↑ | Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, autophagic cargo flux assay | CTSD protein level | AKT-MTOR inhibition | Neuroprotection, mutant SNCA/α-synuclein clearance (use 3-MA and CQ) | N2a, SH-SY5Y | *Drosophila* | [176] |
| Endorepellin/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | PEG3 (paternally expressed 3), KDR/VEGFR2 (kinase insert domain receptor) |  | HUVECs, PAE-KDR/VEGFR2 |  | [177] |
| 20 (S)-Ginsenoside Rg3/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 |  |  |  | SK-Hep1, HepG2, Huh-7, Hep3B |  | [178] |
| Temozolomide/inducer |  | LC3 lipidation↑ |  |  |  | ATM (ATM serine/threonine kinase) ‑AMPK‑ULK1 | Anti-cancer | U87MG, U251 |  | [179] |
| Bortezomib/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AMPK | Protective autophagy (use 3-MA) | PANC-1, HT-29 |  | [180] |
| Lapatinib/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Anti-cancer | Huh7, HepG2, HA22T |  | [181] |
| Clioquinol/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | MTOR inhibition | Anti-cancer (use 3-MA and BAF) | RPMI-8226, OPM2, OCI-AML2, THP-1, K562 |  | [182] |
| ANK-199/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | CAL 27, CAR |  | [183] |
| Sodium arsenite/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA) | INS-1 |  | [184] |
| Idarubicin/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use wortmannin, BAF, CQ) | K562, CCL cells from humans |  | [185] |
| GSK2578215A/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Protective autophagy | SHSY5Y |  | [186] |
| Psoralidin/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer | A549 |  | [187] |
| Arsenic trioxide/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | Raji |  | [188] |
| Baicalein/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 degradation | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Anti-cancer (*ULK1*, *BECN1*, *ATG5*&*7* KD) | PC-3, DU145, MDA-MB-231 |  | [189] |
| Caffeine/inducer | LC3 staining↑ | LC3 lipidation↑ |  |  |  | AMPK |  | C2C12 |  | [190] |
| Temsirolimus/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer | ACC-M | Mice | [191] |
| PIK-III/inhibitor | LC3 staining, mCherry/GFP-LC3 | LC3 lipidation | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mCherry-GFP-LC3 | LAMP2 staining | PtdIns3K inhibition | Iron homeostasis | H4, PSN1 |  | [192] |
| DMH1/inhibitor | TEM for autophagic vesicles, GFP-LC3 | LC3 lipidation | SQSTM1/p62 protein level↑ | LC3-II turnover assay |  | AKT-MTOR |  | Cardiomyocytes, HeLa, MCF-7 |  | [193] |
| GC7/inducer | mRFP/GFP-LC3 | LC3 lipidation↑ | p62-GFP | LC3-II turnover assay, mRFP-GFP-LC3 |  |  |  | 2fTGH |  | [194] |
| Cyclovirobuxine D/inducer | TEM for autophagic vesicles↑, GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | MCF-7 |  | [195] |
| Resveratrol/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Protective autophagy (use 3-MA and *BECN1* KD) | B16 |  | [196] |
| NSC185058&377071/inhibitors | TEM for autophagic vesicles↓, GFP-LC3↓ | LC3 lipidation↓, FYVE-RFP | [14C]-valine labeled amino acids degradation↓ | Autophagosome biogenesis inhibition assay |  | ATG4B | Anti-cancer (*ATG4B* KD) | Saos-2, 293T, HuH7, MDA-MB468 | Mice | [197] |
| APO866/inducer | LC3 staining↑ | LC3 lipidation | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  |  | Anti-cancer (*ATG5*&*7*, *BECN1* KD) | Jurkat, Ramos |  | [198] |
| VATG-027&032/inhibitors | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | mRFP-GFP-LC3 | LysoTracker, CTSB protein level, LAMP1 staining | Lysosomal function impairment | Anti-cancer (*ULK1, ATG5*&*12* KD) | U-2 OS |  | [199] |
| Apogossypolone/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑, BECN1-BCL2 interaction↓ | SQSTM1/p62 protein level↓ |  |  |  | Anti-cancer | CNE1&2 | Mice | [200] |
| Trehalose/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | Non-canonical autophagic pathway | Cytoprotective function | Podocyte |  | [201] |
| CX-4945/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer | HeLa, LNCaP |  | [202] |
| Liensinine, isoliensinine, dauricine, cepharanthine/inducers | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA levels↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | MTOR inhibition | Anti-cancer (*ATG7* KO) | HeLa, MCF-7, PC-3, Hep3B, A549, H1299, LO2 |  | [203] |
| Glutaminase-2/inducer |  | LC3 lipidation↑ |  |  |  | MTOR inhibition | Anti-cancer | HepG2 |  | [204] |
| GD3 ganglioside/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑, PtdIns3P generation↑ |  | LC3-II turnover assay | LAMP1 staining |  |  | Human primary fibroblasts, MEFs |  | [205] |
| SAR405/inhibitor | GFP-LC3↓ | LC3 lipidation↓, GFP-FYVE↓ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LysoTracker, LAMP1 staining, CTSD protein level | PtdIns3K inhibition | Anti-cancer | HeLa, PC3, U87MG |  | [206] |
| KYP-2047/inducer |  | LC3 lipidation↑ | SQSTM1/p62 degradation, Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Neuroprotection, mutant SNCA/α-synuclein clearance |  | Mice | [207] |
| Palmitic acid/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | MAPK9/JNK2 activation | Anti-cancer (use 3-MA and *BECN1*, *ATG5* KD) | HepG2, SMMC-7721 |  | [208] |
| Metformin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | STAT3 signaling downregulation | Anti-cancer (use 3-MA, CQ and *BECN1*, *ATG5* KD) | ESCC | Mice | [209] |
| Rotenone/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LAMP2 and CTSD staining | Lysosomal function impairment | Neurotoxicity | DA neurons, PC12 |  | [210] |
| Platycodin D/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | Non-canonical autophagic pathway | Anti-cancer (use CQ and BAF) | HegG2, Hep3B, MCF-7, MDA-MB-231, A549, 95D |  | [211] |
| Anacardic acid, curcumin, garcinol, spermidine/inducers | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | MTOR inhibition, acetyltransferase EP300 inhibition |  | U-2 OS, primary mice embryonic fibroblasts |  | [212] |
| Citreoviridin/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  |  | Anti-cancer (use 3-MA and *ATG5* KD) | HepG2 |  | [213] |
| Quinacrine analogs/inhibitors | mRFP/GFP-LC3 |  |  | mRFP-GFP-LC3 |  |  | Anti-cancer | U-2 OS |  | [214] |
| Trichostatin A/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | FOXO1 (forkhead box O1) | Anti-cancer (use 3-MA, CQ and *ATG7* KD) | HCT116, HepG2 |  | [215] |
| Glucocorticoids/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Cell proliferation (use 3-MA) | Rat bone marrow mesenchymal stem cells |  | [216] |
| Platycodin D/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition, MAPK |  | A549, H460 |  | [217] |
| Baicalein/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use CQ) | HepG2 |  | [218] |
| (+)-Epogymnolactam/inducer |  | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition, PTEN (phosphatase and tensin homolog) |  | NIH3T3 |  | [219] |
| Bergapten/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  |  | Anti-cancer (use 3-MA) | MCF-7, ZR-75 |  | [220] |
| SC-III3/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition |  | HepG2 |  | [221] |
| Olaparib/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (*ATG5* KD) | MDA-MB-231 |  | [222] |
| Gartanin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | MAPK/JNK-BCL2 | Anti-cancer (use 3-MA, BAF and *ATG5* KD) | Hep3B, HepG2, Huh7, MEFs |  | [223] |
| Lentztrehaloses A&B&C/inducers |  | LC3 lipidation↑ |  |  |  |  |  | Mewo, OVK18 |  | [224] |
| Cilostazol/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | SIRT1 activation | Neuroprotection, Aβ and APP-CTFβ clearance (use BAF) | N2a |  | [225] |
| Guttiferone K/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use HCQ and *ATG7* KO) | HeLa, Capan-2, CNE, MEFs |  | [226] |
| Flubendazole/inducer | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑, BECN1-BCL2 interaction | SQSTM1/p62 protein level↓ | LC3-II turnover assay, mRFP-GFP-LC3 | LAMP1 protein level, RFP-LAMP1, LAMP1&2 staining | MTOR, TFEB |  | HeLa |  | [227] |
| Celastrol/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AR-*MIR101* |  | LNCaP |  | [228] |
| Dehydroandrographolide/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | MTOR inhibition | Anti-cancer (use 3-MA, BAF, CQ and *BECN1* KD) | SAS, OECM-1 | Mice | [229] |
| Nutlin 3a/inducer | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ | SQSTM1/p62 protein level↓ | mCherry-GFP-LC3 |  | TP53/p53, AMPK | Anti-cancer (use 3-MA) | OCI-AML3 |  | [230] |
| Torin-2/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | MTOR inhibition | Anti-cancer (use CQ) | HepG2, Hep3B, SNU |  | [231] |
| Crizotinib/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  | LysoTracker | AKT-MTOR inhibition, STAT3 inhibition | Anti-cancer (use 3-MA, CQ and *BECN1* KD) | SPC-A1, HCC827, H1975, A549 | Mice | [232] |
| Obatoclax/inhibitor | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay |  | Non-canonical autophagic pathway | Anti-cancer (*BECN1* and *ATG7* KD) | HT29, SW480 |  | [233] |
| Quinacrine/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  |  | Anti-cancer (use BAF) | OV2008/C13, HeyA8/HeyA8MDR | Mice | [234] |
| Apigenin/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | BCPAP |  | [235] |
| Oroxylin A/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | DQ-BSA | mRFP-GFP-LC3 | LysoTracker, LAMP1 and CTSD protein levels | MTOR-STAT3-Notch | Anti-cancer (use 3-MA and *BECN1* KD) | U251, U118, U87 |  | [236] |
| Glycyrrhetinic acid/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  | MAPK/JNK | Protective autophagy (use CQ and *ATG7* KD) | A549, H1299 |  | [237] |
| Cinnamtannin D1/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | A549, H460 |  | [238] |
| Sedanolide/inducer |  | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer | HepJ5 |  | [239] |
| Liensinine/inhibitor | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 | LysoTracker, LysoSensor, LAMP1 staining and protein level, CTSB, D&L protein levels | RAB7A recruitment inhibition/autophagosome-lysosome fusion inhibition | Anti-cancer (*ATG5&7* KD) | MDA-MB-231, MCF-7, U937, LN229, A549 | Mice | [240] |
| Elaiophylin/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑, DQ-BSA | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LysoTracker, LAMP1-RFP, CTSB&D protein levels | Lysosomal function impairment | Anti-cancer (*BECN1* and *ATG5* KD) | CaOV-3, SKOV3, OVCAR3, A2780, SW626 | Mice | [241] |
| Lamotrigine/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Neuroprotection, β-Site AβPP-cleaving enzyme 1 clearance (use 3-MA) | CHO, HEK293 | Mice | [242] |
| Raloxifene/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3, GFP-LC3 lysosomal delivery and proteolysis |  | AMPK | Anti-cancer (*BECN1* KD) | MCF-7, SKBr-3, HCT116 |  | [243] |
| 17-AAG/inhibitor |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | JeKo-1 |  | [244] |
| Melamine/inducer |  | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | Mesangial cells |  | [245] |
| Quinoline-based Antimalarial drugs/inhibitors | LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer | U251, LN229 |  | [246] |
| BRD5631/inducer | mCherry/GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation | SQSTM1/p62 protein level↓, DQ-BSA, Aggregation-prone protein degradation↑ | LC3-II turnover assay, mCherry-GFP-LC3, autophagic cargo flux assay | LysoTracker | Non-canonical autophagic pathway | Cytoprotective function, mutant HTT (huntingtin) clearance, bacteria clearance, IL1B secretion inhibition (*ATG5* KO) | HeLa, MEFs, iPSC-derived neurons, iBMDMs |  | [247] |
| Unsaturated fatty acids/inducers | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | Non-canonical autophagic pathway |  | U-2 OS | Mice | [248] |
| Orexin A/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer | HCT-116 |  | [249] |
| Honokiol/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Cell migration inhibition (use 3-MA) | N2a |  | [250] |
| ZT-25/inhibitor | mRFP/mWasabi-LC3↑ | LC3 lipidation↑ |  | mRFP-mWasabi-LC3 |  |  | Protective autophagy (use 3-MA and CQ) | HepG2 |  | [251] |
| Polyphyllin VII/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use CQ) | HepG2 |  | [252] |
| Hinokitiol/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | 4T1, CT26 |  | [253] |
| Punicalagin/inducer | LC3 staining↑ | LC3 lipidation | SQSTM1/p62 protein level↓ | LC3-II turnover assay | LysoTracker |  | Cytoprotective function (*ATG16L1* KD) | Human primary syncytiotrophoblasts |  | [254] |
| Curcumin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer | A375, C8161 |  | [255] |
| Resveratrol/inducer | GFP-LC3↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition |  | HeLa |  | [256] |
| Isoalantolactone/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | PEA-15 upregulation | Anti-cancer | SKOV3 |  | [257] |
| Obatoclax/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | Lysogreen, LAMP1 staining, CTSB, D&L protein levels | Lysosomal function impairment | Anti-cancer | EC109, HKESC-1 |  | [258] |
| Dehydroepiandrosterone/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA level↑ | LC3-II turnover assay | LAMP1 staining | SQSTM1/p62 | Anti-cancer (use 3-MA and *ATG5* KD) | HepG2 |  | [259] |
| Vacuolin-1/inhibitor | mCherry/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 staining↑ | LC3-II turnover assay, mCherry-GFP-LC3 | LAMP2 staining, CTSD protein level | Lysosomal function impairment, PIKFYVE inhibition |  | HeLa, H4 |  | [260] |
| AstragalosideII/inhibitor | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LysoTracker, CTSB, D&L protein levels | Lysosomal function impairment | Anti-cancer | HepG2, SGC-7901 |  | [261] |
| Celecoxib/inhibitor |  | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LysoTracker, LysoSensor | Lysosomal function impairment | Anti-cancer | Human chronic myeloid leukemia cells, KBM5 |  | [262] |
| Valproic acid/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition |  | DU145, LNCaP |  | [263] |
| Indatraline/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay | LysoTracker | MTOR inhibition | Restenosis inhibition | COS-7, smooth muscle cells |  | [264] |
| Cabazitaxel/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *BECN1* KD) | A549 |  | [265] |
| S2101/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | SKOV3 |  | [266] |
| Oleanolic acid/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | AKT-MTOR inhibition | Anti-cancer (*BECN1* KD) | BGC-823, MGC-803, SGC-7901 | Mice | [267] |
| AUTEN-67/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Neuroprotection | HeLa | *Drosophila*, zebrafish, mice | [268] |
| Trehalose/inducer | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Human cytomegalovirus infection inhibition (use BAF) | HFFS, NSCs, H9 embryonic stem cells |  | [269] |
| Cocaine/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | Nitricoxide-GAPDH | Cell death (*BECN1* and *ATG5* KD) | Mice primary cortical cultures | Mice | [270] |
| IR-58/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | TIMM44 (translocase of inner mitochondrial membrane 44)-SOD2 (superoxide dismutase 2)-ROS-MTOR | Anti-cancer (use 3-MA and *ATG7* KD) | HT-29, HCT116, A549, HepG2 | Mice | [271] |
| ML246/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | BECN2-GRIPAP1/GPRASP1 (GRIP1 associated protein 1) | Cytoprotective function | HeLa | Mice | [272] |
| GNS-396/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | HCV infection inhibition (use HCQ) | HeLa, SkBr3 |  | [273] |
| SKF-525A/inhibitor | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LAMP1-GFP | Autophagosome-lysosome fusion inhibition |  | Rat primary hepatocytes |  | [274] |
| ABT-751/inducer | GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and BAF) | Huh-7 |  | [275] |
| Salvianolic acid B/inducer | TEM for autophagic vesicles↑, GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay | LysoTracker | MTOR inhibition | Anti-cancer (use 3-MA and *ATG5* KD) | HCT116, HT29 | Mice | [276] |
| Trehalose/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay |  | SLC2A (solute carrier family 2) inhibition | Hepatic steatosis alleviation | Mice primary hepatocytes | Mice | [277] |
| Ginsenoside 20(S)-Rg3/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Anti-cancer (use CQ) | SKOV3 | Mice | [278] |
| Salidroside/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Cytoprotective function (use 3-MA) | HUVECs |  | [279] |
| Tenovin-6/inhibitor | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA level | LC3-II turnover assay, mRFP-GFP-LC3 | LysoTracker, LAMP1 staining, CTSB activity | Lysosomal function impairment |  | MEFs, HUVECs, LEC, BEC, Huh7, A549, OCI-Ly1, KMM |  | [280] |
| Dasatinib/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  |  |  |  |  |  | Mice | [281] |
| Triptolide/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓, Aggregation-prone protein degradation↑ | LC3-II turnover assay, autophagic cargo flux assay | LysoSensor |  | Neuroprotection, mutant SNCA/α-synuclein clearance (use 3-MA) | MN9D |  | [282] |
| Benzyl isothiocyanate/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | ER stress | Protective autophagy (use 3-MA and *ATG5* KD) | A549, H661, SK-MES-1 | Mice | [283] |
| Toxicarioside O/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition, SIRT1 | Protective autophagy (use 3-MA and CQ) | HCT116, SW480 |  | [284] |
| AUTEN-99/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑, FYVE-GFP | SQSTM1/p62 protein level↓ | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Neuroprotection (use BAF) | HeLa | *Drosophila*, mice | [285] |
| Verapamil/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | Cellular metabolism modulation | Protective autophagy (use CQ and *ATG5*&*7* KO) | COLO 205, PC-3, PNT-2 |  | [286] |
| Vacuolin-1 analogues/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 | LAMP1 staining | Autophagosome-lysosome fusion inhibition |  | HeLa |  | [287] |
| Fimasartan, losartan, eprosartan, valsartan/inducers | LC3 staining↑ | LC3 lipidation↑, ATG12–ATG5 conjugation |  | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | PC-3, DU-145, LNCap-LN3 |  | [288] |
| Isodeoxyelephantopin/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | NFE2L2/Nrf2 (nuclear factor, erythroid 2 like 2)-SQSTM1-KEAP1 (kelch like ECH associated protein 1) feedback loop | Protective autophagy (use 3-MA) | H1299, A549 |  | [289] |
| Tenovin-6/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 degradation | LC3-II turnover assay | LysoTracker | Lysosomal function impairment | Anti-cancer (*ATG5*, *LC3B*, *SQSTM1/p62* KD) | RIVA, U2932, HBL1, SU-DHL4&5&6&10 |  | [290] |
| Aminopyrimidines/inhibitors | GFP-LC3↓ | LC3 lipidation↓, EGFP-WIPI2b | SQSTM1/p62 protein level↑ |  |  | PtdIns3K inhibition | Anti-cancer | MCF-7 |  | [291] |
| Tripchlorolide/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | A549, A549/DDP |  | [292] |
| w09/inducer | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA levels↑ | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mCherry-GFP-LC3, mRFP-mWasabi-LC3 |  | EGFR-RAS-RAF1-MAP2K-MAPK1/3 | Anti-cancer (use CQ and *ATG5* KD) | BGC-823, HGC-27, SGC-7901, AGS, HeLa |  | [293] |
| S14161/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | MTOR inhibition, BECN1-PtdIns3K complex | Anti-cancer | MM, RPMI-8226, KMS11, OPM2, K562 |  | [294] |
| Elaiophylin/inhibitor | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 |  | ER stress | Anti-cancer | U266, RPMI8226 | Mice | [295] |
| PF-543/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA, wortmannin, BAF) | Ca9-22, HSC-3 |  | [296] |
| Isoliquiritigenin/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 staining | Autophagosome biogenesis inhibition assay |  |  | Anti-cancer (use 3-MA) | OVCAR5, ES-2 |  | [297] |
| Dauricine, daurisoline/inhibitors | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 | LysoTracker, LysoSensor, CTSB&D protein levels | V-ATPase inhibition, autophagosome-lysosome fusion inhibition | Anti-cancer | HeLa, MEFs |  | [298] |
| Dichloroacetate/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | mRFP-GFP-LC3 |  | AKT-MTOR inhibition | Protective autophagy (use 3-MA) | TE‑1 |  | [299] |
| 2,5-Hexanedione/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use PIK-III) | VSC4.1 |  | [300] |
| Trifluoperazine/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ |  | LysoTracker, CTSB&L protein levels |  | Anti-cancer | U251, U87 |  | [301] |
| Lactoferrin/inducer | LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | LRP1 (LDL receptor related protein 1) |  | NIH/3T3 |  | [302] |
| Sevoflurane/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | LC3 deacetylation-SIRT1 | Cytoprotective function |  | Rat | [303] |
| Baicalein/inducer | GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | MAPK/ERK, BECN1 | Anti-cancer (use CQ) | HEY |  | [304] |
| ROC-325/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | CTSD protein and mRNA levels |  | Anti-cancer (*ATG5*&*7* KD) | A498, 786-0 | Mice | [305] |
| Norditerpenoids, dinorditerpenoids/inducers | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | mRFP-GFP-LC3 |  |  |  | A2780, HEY |  | [306] |
| Oxautin-1&2/inhibitors | mCherry/GFP-LC3↑ | LC3 lipidation↑, GFP-WIPI2↓ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mCherry-GFP-LC3 |  |  |  | MCF-7 |  | [307] |
| GANT61/inducer |  | LC3 lipidation↑ |  | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  |  | Protective autophagy (use 3-MA and CQ) | LX-2 |  | [308] |
| *Dendrobium nobile* Lindl alkaloid/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓, DQ-BSA | Autophagosome biogenesis inhibition assay | LysoTracker, CTSB&D protein levels and activity |  | Neuroprotection (use BAF and HCQ) | Rat primary neurons |  | [309] |
| *Conyza blinii* saponin/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA levels | LC3-II turnover assay | LAMP1&2 staining | MTOR |  | HeLa |  | [310] |
| Bay11-7082, Z-L-phenyl chloromethyl ketone/inhibitors | mRFP/GFP-LC3 | GFP-LC3 lipidation | SQSTM1/p62 degradation | LC3-II turnover assay, mRFP-GFP-LC3, GFP-LC3 lysosomal delivery and proteolysis |  |  |  | MEFs, HeLa, yeast | plant | [311] |
| 9f/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, mRFP-GFP-LC3 |  | BRD4 (bromodomain containing 4)-AMPK-MTOR-ULK1 | Anti-cancer (use 3-MA) | MCF-7, MDA-MB-231 | Mice | [312] |
| PI-103, nonactin, valinomycin, quercetin, ivermectin, harmine/inducers | mRFP/GFP-LC3↑ |  |  | mRFP-GFP-LC3 |  |  |  | U343 |  | [313] |
| RA-XII/inhibitor | GFP-LC3↓ | LC3 lipidation↓ |  | LC3-II turnover assay |  | AKT-AMPK-MTOR | Anti-cancer (use CQ) | HepG2 |  | [314] |
| Coumarin derivatives/inhibitors | GFP-LC3 | LC3 lipidation | SQSTM1/p62 degradation | LC3-II turnover assay |  |  |  | MCF-7 |  | [315] |
| ABT-737/inducer | LC3 staining↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA) | HepG2/ADM |  | [316] |
| Jaspine B analogue (7f)/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  |  | Anti-cancer | PC-3 |  | [317] |
| Eriocalyxin B/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA, CQ and *BECN1*, *ATG5* KD) | MCF-7, MDA-MB-231 | Mice | [318] |
| Cepharanthine/inhibitor | mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 | LysoTracker, LAMP1 staining and protein level, CTSB&D protein levels and activity | Autophagosome-lysosome fusion inhibition | Anti-cancer | H1975, H1299, HCC827, A549 | Mice | [319] |
| UAMC-2526/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, GFP-LC3 lysosomal delivery and proteolysis |  | ATG4 inhibition | Anti-cancer | Jurkat | Mice | [320] |
| Tioconazole/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | RFP-LAMP1 | ATG4 inhibition | Anti-cancer (*ATG4* KD) | H4, HCT116, MDA-MB-231 | Mice | [321] |
| Diphenyldiselenide derivative (DPDS 6)/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | MAPK/JNK | Anti-cancer (use 3-MA, wortmannin, CQ) | HTB-54 |  | [322] |
| Neferine/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | mRFP-GFP-LC3 | LAMP2 staining, LAMP2 and CTSD protein levels | Lysosomal function impairment |  | ARPE-19, hTERT-RPE1, HEK-293, HeLa, N2a |  | [323] |
| Berbamine/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mRFP-GFP-LC3 | LysoTracker, LAMP1&2 protein levels, LAMP1-GFP | Autophagosome-lysosome fusion inhibition |  | MCF-7, MDA-MB-231, A549, Eca109, SMMC-7721 |  | [324] |
| Aumitin/inhibitor | mCherry/GFP-LC3↓ | LC3 lipidation↓ | SQSTM1/p62 protein level↑ | Autophagosome biogenesis inhibition assay, mCherry-GFP-LC3 |  | Mitochondrial complex I | Anti-cancer | MCF-7 |  | [325] |
| 6-Hydroxydopamine/inhibitor | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 degradation | LC3-II turnover assay, mCherry-GFP-LC3 | LysoTracker, LAMP1 protein level, CTSB&D activity | TFEB inactivation, lysosomal function impairment | Neurotoxicity (TFEB overexpression) | SH-SY5Y |  | [326] |
| Inflachromene/inhibitor | mRFP/GFP-LC3↓ | LC3 lipidation↓, ATG12–ATG5 conjugation |  | LC3-II turnover assay, mRFP-GFP-LC3 |  | BECN1 activity modulation |  | HEK293T |  | [327] |
| 3′-epi-12β-hydroxyfroside/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay | LAMP1 staining | HSP90 (heat shock protein 90)-AKT-MTOR inhibition | Protective autophagy (use 3-MA and CQ) | A549, H460, DLD-1, HCT-116, H29, U87 |  | [328] |
| Clozapine/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  |  |  | AMPK-ULK1-BECN1 |  |  | Rat | [329] |
| Panduratin A/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | Autophagosome biogenesis inhibition assay |  | MTOR inhibition | Protective autophagy (use 3-MA and CQ) | A375 |  | [330] |
| Resveratrol/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  | CTSD protein level |  | Anti-cancer (use 3-MA) | K562/ADM |  | [331] |
| Cyanidin/inhibitor |  | LC3 lipidation↓ | SQSTM1/p62 protein level↑ |  |  |  | Regulation of chondrocyte hypertrophic differentiation | C3H10T1/2 |  | [332] |
| MSL/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 | LAMP1 staining | Non-canonical autophagic pathway, TFEB nuclear translocation | Treatment for metabolic syndrome and diabetes (use BAF and *TFEB*, *ATG7* KO) | HeLa | Mice | [333] |
| ML9/inhibitor | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | LC3-II turnover assay | LysoTracker |  | Cell death | Rat primary cardiomyocytes |  | [334] |
| FMK-9a/inducer | GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | LC3-II turnover assay, GST-LC3 lysosomal delivery and proteolysis |  | ATG4B inhibition, non-canonical autophagic pathway |  | HeLa, MEFs |  | [335] |
| Cyclosporin A/inducer | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay, mCherry-GFP-LC3 |  | NRP2 (neuropilin 2)-WDFY1 (WD Repeat and FYVE domain containing 1) | Cell proliferation | Rat primary cardiac fibroblasts |  | [336] |
| Licochalcone A/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  | ULK1-ATG13 | Anti-cancer | HuH7, HepG2 |  | [337] |
| Patulin/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | HepG2 |  | [338] |
| Compound C/inducer | LC3 staining↑ | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | Non-canonical autophagic pathway | Protective autophagy (use 3-MA) | QBC939, RBE |  | [339] |
| Maslinic acid/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation↑ |  | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | AKT-MTOR inhibition, HSPA8 downregulation | Anti-cancer (use 3-MA) | Panc‐28 |  | [340] |
| Sulforaphane/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay |  | HDAC6 (histone deacetylase 6)-PTEN |  | MDA-MB-231&468, BT549 |  | [341] |
| Resveratrol/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AKT-MTOR inhibition, SIRT1 | Protective autophagy (use 3-MA) | A549 |  | [342] |
| α-Hederin/inhibitor | mCherry/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | mCherry-GFP-LC3 | LysoTracker, CTSD protein level | Lysosomal function impairment | Anti-cancer | H1299, H1650 |  | [343] |
| SMER28/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  | LAMP2a and CTSD protein levels, LAMP2a staining | Non-canonical autophagic pathway, TFEB nuclear translocation | Radio-protection (*LC3A* and *TFEB* KD) | HepG2, NCTC | Mice | [344] |
| ULK-101/inhibitor | GFP-LC3↓ | LC3 lipidation↓ |  | LC3-II turnover assay |  | ULK1 inhibition | Anti-cancer | U-2 OS |  | [345] |
| Tubeimoside I/inhibitor | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑, BECN1-BCL2 interaction | SQSTM1/p62 protein level↑, DQ-BSA | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 | LAMP1&2 and CTSD protein levels | Lysosomal function impairment | Anti-cancer (use CQ and BAF) | HeLa, SiHa | Mice | [346] |
| Patulin/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay | CTSB protein level | Lysosomal-mitochondrial axis impairment | Anti-cancer (use 3-MA) | HepG2 |  | [347] |
| 1,3-Dichloro-2-Propanol/inhibitor | TEM for autophagic vesicles↓, LC3 staining↓ | LC3 lipidation↓ | SQSTM1/p62 protein level↑ | Autophagosome biogenesis inhibition assay |  | TP53-AMPK-MTOR |  | HepG2 |  | [348] |
| Saikosaponin-d/inducer | GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | CAMK2-AMPK-MTOR | Cell death | UCL93, OX161 |  | [349] |
| Flavokawain B/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay, autophagosome biogenesis inhibition assay |  | ATF4-DDIT3 (DNA damage inducible transcript 3)-TRIB3 (tribbles pseudokinase 3)-AKT-MTOR-RPS6KB1 | Anti-cancer (use 3-MA, CQ and *ATG5*&*7* KD) | U251, U87, T98 | Mice | [350] |
| YM155/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA, CQ and *BECN1* KD) | A549, H1650 | Mice | [351] |
| Compound 9m/inducer | LC3 staining↑ | LC3 lipidation↑ |  |  |  | MTOR inhibition | Cell cycle inhibition | T-47D, MCF7, MDA-MB-231, SiHa, HeLa | Mice | [352] |
| C1A/inhibitor | mCherry/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mCherry-GFP-LC3 |  |  | Anti-cancer | HCT116, U-2 OS, MEFs |  | [353] |
| MLN4924/inducer | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *ATG5* KD) | HCT116, HT29 |  | [354] |
| CA-5f/inhibitor | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA levels | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 | LysoTracker, LAMP1 staining, CTSB&D activity | Autophagosome-lysosome fusion inhibition | Anti-cancer | A549, HUVECs, H1299, H157, HepG2, HeLa, HEK293 | Mice | [355] |
| Carvedilol/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level↑ |  |  |  | NLRP3 inflammasome inhibition (use 3-MA) | J774A.1 |  | [356] |
| AZD9291/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | PtdIns3K-AKT | Anti-cancer (use CQ) | H1975, A549 | Mice | [357] |
| Cordycepin/inducer |  | LC3 lipidation | SQSTM1/p62 protein level↓ | LC3-II turnover assay |  | AMPK | Treatment for Machado–Joseph disease | N2a | Mice | [358] |
| Isopsoralen/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level |  | LysoTracker, LAMP1 protein level |  | Cytoprotective function (use 3-MA and BAF) | Rat chondrocytes |  | [359] |
| NVP-BEZ235/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  |  | Anti-cancer (use 3-MA, CQ, BAF and *ATG5* KD) | U266, RPMI8226, KM3, human primary multiple myeloma |  | [360] |
| Bufalin/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑, ATG12–ATG5 conjugation |  | LC3-II turnover assay |  | AKT-MTOR inhibition | Protective autophagy (use CQ) | BGC823, MGC803, SGC7901 |  | [361] |
| IITZ-01/inhibitor | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | LC3-II turnover assay | LAMP2 and CTSB&D protein levels | Lysosomal function impairment | Anti-cancer | MDA-MB-231&453 | Mice | [362] |
| SAR405/inhibitor | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ |  |  |  | Auditory fear memory consolidation disruption (use 3-MA and *ATG5* KD) |  | Mice | [363] |
| S130/inhibitor | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑, DQ-BSA | LC3-II turnover assay, mRFP-GFP-LC3 | LysoTracker, LAMP1 staining | ATG4B inhibition | Anti-cancer (*ATG4B* KO) | MEFs, HeLa | Mice | [364] |
| Saikosaponin-d/inhibitor | LC3 staining↑ | LC3 lipidation↓ | SQSTM1/p62 protein level↑ | Autophagosome biogenesis inhibition assay |  | PtdIns3K-AKT-MTOR activation | Cytoprotective function | Rat primary pancreatic stellate cells |  | [365] |
| Sodium butyrate/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ |  |  |  | STK11/LKB1 (serine/threonine kinase 11)-AMPK |  | HCT-116, HT-29 |  | [366] |
| Palmitic acid/inhibitor |  | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA level↑ | LC3-II turnover assay |  |  | Neurotoxicity (use CQ) | Mice primary astrocytes |  | [367] |
| Lidocaine/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ |  | LC3-II turnover assay |  |  | Protective autophagy (use BAF) | C6 |  | [368] |
| Regorafenib/inhibitor | TEM for autophagic vesicles↑, mRFP/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑, BECN1-BCL2 interaction↓ | SQSTM1/p62 protein level↑, DQ-BSA | Autophagosome biogenesis inhibition assay, mRFP-GFP-LC3 | LAMP1 staining | PSAT1 (phosphoserine aminotransferase 1) stabilization, autophagosome-lysosome fusion inhibition | Anti-cancer (use 3-MA, CQ, BAF and *ATG5*&*7* KD) | U251, U87, human primary glioblastoma cells | Mice | [369] |
| YM201636/inducer |  | LC3 lipidation↑ |  | Autophagosome biogenesis inhibition assay |  | PIKFYVE inhibition | Anti-cancer (use 3-MA) | HepG2, Huh‑7 |  | [370] |
| Felodipine/inducer | mRFP/GFP-LC3↑ | LC3 lipidation↑ |  | LC3-II turnover assay, mRFP-GFP-LC3 |  |  | Neuroprotection (*ATG7* KO) | Mice primary neurons | Mice | [371] |
| Xanthoangelol/inducer | LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | AKT-MTOR inhibition | Anti‐metastatic activity (use 3-MA and *BECN1* KD) | Hep3B, Huh7 |  | [372] |
| 6-Bromoindirubin-3'-Oxime/inducer | TEM for autophagic vesicles↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↓ |  |  | MTOR and GSK3B inhibition | Cytoprotective function |  | Mice | [373] |
| STF-62247/inhibitor | mCherry/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑, ATG12­–ATG5 conjugation | SQSTM1/p62 protein level↑ | LC3-II turnover assay, mCherry-GFP-LC3 | LysoTracker, LAMP2 staining, CTSD protein level | Lysosomal function impairment | Anti-cancer (*BECN1* and *ATG5* KO) | RCC4&10 |  | [374] |
| Sasanquasaponin ΙΙΙ/inducer | TEM for autophagic vesicles↑, GFP-LC3↑ | LC3 lipidation↑ | DQ-BSA | Autophagosome biogenesis inhibition assay | LAMP1 staining | AKT-MTOR inhibition | Anti-cancer (use 3-MA) | A375 |  | [375] |
| SI113/inducer |  | LC3 lipidation↑ | SQSTM1/p62 protein level |  |  | AKT-MTOR inhibition | Anti-cancer | ADF, U373MG, T98G, GBM-1&3 |  | [376] |
| Oleate/inhibitor | GFP-LC3↓ |  | SQSTM1/p62 protein level↑ |  |  | MAPK, ATF2 (activating transcription factor 2) |  | Hepa-1c1c7 |  | [377] |
| 1400W/inducer |  | LC3 lipidation↑ |  |  |  |  | Anti-cancer | U87MG |  | [378] |
| ECDD-S27/inhibitor | mRFP/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein level↑ | mRFP-GFP-LC3 | LysoTracker | V-ATPase inhibition | Anti-cancer (use BAF) | RAW264.7, HT-29, HepG2, HeLa |  | [379] |
| WX20120108/inducer | TEM for autophagic vesicles↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA level↑ | LC3-II turnover assay | LysoTracker, CTSB&D activity | ROS-FOXO | Anti-cancer | HeLa, MDA-MB-231 |  | [380] |
| Pristimerin/inducer |  | LC3 lipidation↑ |  |  |  | ROS-MAPK/JNK | Anti-cancer (use 3-MA) | K562 |  | [381] |
| SLLN-15/inducer | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑, LC3 staining↑ | LC3 lipidation↑ | SQSTM1/p62 protein level | LC3-II turnover assay, autophagosome biogenesis inhibition assay, mCherry-GFP-LC3 |  | AKT-MTOR inhibition | Anti-cancer (use 3-MA and *BECN1*, *ATG5*&*7* KD) | MDA-MB-231, BT-20 | Mice | [382] |
| Dipyridamole/inhibitor | TEM for autophagic vesicles↑, mCherry/GFP-LC3↑ | LC3 lipidation↑ | SQSTM1/p62 protein and mRNA levels | mCherry-GFP-LC3 | β-D-galactosidase activity | ATP reduction, PKA (protein kinase A) activation | Anti-cancer | PC-3 |  | [383] |
| Autogramins/inhibitors | GFP-LC3 | LC3 lipidation | SQSTM1/p62 protein level | LC3-II turnover assay, mCherry-GFP-LC3 |  | GRAMD1A | Cholesterol distribution | MCF-7, HEK293T |  | [384] |
| Authipyrin/inhibitor | GFP-LC3 | LC3 lipidation |  | LC3-II turnover assay |  | Mitochondrial complex I |  | MCF-7, HEK293T, HeLa |  | [385] |

Abbreviations in the Table: 3-MA, 3-methyladenine; AMPK, AMP-activated protein kinase; ATG, autophagy-related; BAF, bafilomycin A1; BECN1, beclin 1; CQ, chloroquine; CTSB, cathepsin B; CTSD, cathepsin D; CTSL, cathepsin L; ER, endoplasmic reticulum; GFP, green fluorescent protein; KD, knockdown; KO, knockout; LAMP, lysosomal associated membrane protein; LC3, microtubule associated protein 1 light chain 3; MAPK, mitogen-activated protein kinase; mRFP, monomeric red fluorescent protein; MTOR, mechanistic target of rapamycin kinase; PtdIns3K, class III phosphatidylinositol 3-kinase; PtdIns3P, phosphatidylinositol-3-phosphate; ROS, reactive oxygen species; SIRT1, sirtuin 1; STAT3, signal transducer and activator of transcription 3; TEM, transmission electron microscopy; V-ATPase, vacuolar-type H+-translocating ATPase.

References

1. Saadane A, Delautier D, Lestriez V, et al. Down-regulation of liver RNA breakdown by turpentine administration in the starved rat: autophagy and relevant factors. Inflamm Res. 1999 Apr;48(4):210-217.

2. Yuan W, Stromhaug PE, Dunn WA, Jr. Glucose-induced autophagy of peroxisomes in Pichia pastoris requires a unique E1-like protein. Mol Biol Cell. 1999 May;10(5):1353-1366.

3. Ohshita T. Suppression of autophagy by ethionine administration in male rat liver in vivo. Toxicology. 2000 May 19;147(1):51-57.

4. Kanzawa T, Kondo Y, Ito H, et al. Induction of autophagic cell death in malignant glioma cells by arsenic trioxide. Cancer Res. 2003 May 1;63(9):2103-2108.

5. Gómez‐Santos C, Ferrer I, Santidrián AF, et al. Dopamine induces autophagic cell death and α‐synuclein increase in human neuroblastoma SH‐SY5Y cells. Journal of neuroscience research. 2003;73(3):341-350.

6. Opipari AW, Jr., Tan L, Boitano AE, et al. Resveratrol-induced autophagocytosis in ovarian cancer cells. Cancer Res. 2004 Jan 15;64(2):696-703.

7. Ellington AA, Berhow M, Singletary KW. Induction of macroautophagy in human colon cancer cells by soybean B-group triterpenoid saponins. Carcinogenesis. 2005 Jan;26(1):159-167.

8. Kanzawa T, Zhang L, Xiao L, et al. Arsenic trioxide induces autophagic cell death in malignant glioma cells by upregulation of mitochondrial cell death protein BNIP3. Oncogene. 2005 Feb 3;24(6):980-991.

9. Sarkar S, Floto RA, Berger Z, et al. Lithium induces autophagy by inhibiting inositol monophosphatase. J Cell Biol. 2005 Sep 26;170(7):1101-1111.

10. Herman-Antosiewicz A, Johnson DE, Singh SV. Sulforaphane causes autophagy to inhibit release of cytochrome C and apoptosis in human prostate cancer cells. Cancer Res. 2006 Jun 1;66(11):5828-5835.

11. Tettamanti G, Malagoli D, Marchesini E, et al. Oligomycin A induces autophagy in the IPLB-LdFB insect cell line. Cell Tissue Res. 2006 Oct;326(1):179-186.

12. Kuo PL, Hsu YL, Cho CY. Plumbagin induces G2-M arrest and autophagy by inhibiting the AKT/mammalian target of rapamycin pathway in breast cancer cells. Mol Cancer Ther. 2006 Dec;5(12):3209-3221.

13. Buzzai M, Jones RG, Amaravadi RK, et al. Systemic treatment with the antidiabetic drug metformin selectively impairs p53-deficient tumor cell growth. Cancer Res. 2007 Jul 15;67(14):6745-6752.

14. Ertmer A, Huber V, Gilch S, et al. The anticancer drug imatinib induces cellular autophagy. Leukemia. 2007 May;21(5):936-942.

15. Fujiwara K, Iwado E, Mills GB, et al. Akt inhibitor shows anticancer and radiosensitizing effects in malignant glioma cells by inducing autophagy. International Journal of Oncology. 2007 Oct;31(4):753-760.

16. Xu ZX, Liang J, Haridas V, et al. A plant triterpenoid, avicin D, induces autophagy by activation of AMP-activated protein kinase. Cell Death Differ. 2007 Nov;14(11):1948-1957.

17. Sarkar S, Perlstein EO, Imarisio S, et al. Small molecules enhance autophagy and reduce toxicity in Huntington's disease models. Nat Chem Biol. 2007 Jun;3(6):331-338.

18. Cui Q, Tashiro SI, Onodera S, et al. Oridonin induced autophagy in human cervical carcinoma HeLa cells through Ras, JNK, and P38 regulation. Journal of Pharmacological Sciences. 2007 Dec;105(4):317-325.

19. Newman RA, Kondo Y, Yokoyama T, et al. Autophagic cell death of human pancreatic tumor cells mediated by oleandrin, a lipid-soluble cardiac glycoside. Integr Cancer Ther. 2007 Dec;6(4):354-364.

20. Li HB, Yi X, Gao JM, et al. Magnolol-lnduced H460 cells deathvia autophagy but not apoptosis. Archives of pharmacal research. 2007;30(12):1566-1574.

21. Sarkar S, Davies JE, Huang Z, et al. Trehalose, a novel mTOR-independent autophagy enhancer, accelerates the clearance of mutant huntingtin and alpha-synuclein. J Biol Chem. 2007 Feb 23;282(8):5641-5652.

22. Zhang L, Yu J, Pan H, et al. Small molecule regulators of autophagy identified by an image-based high-throughput screen. Proc Natl Acad Sci U S A. 2007 Nov 27;104(48):19023-19028.

23. Yokoyama T, Miyazawa K, Naito M, et al. Vitamin K2 induces autophagy and apoptosis simultaneously in leukemia cells. Autophagy. 2008 Jul;4(5):629-640.

24. Meschini S, Condello M, Calcabrini A, et al. The plant alkaloid voacamine induces apoptosis-independent autophagic cell death on both sensitive and multidrug resistant human osteosarcoma cells. Autophagy. 2008 Nov;4(8):1020-1033.

25. Cao Q, Yu C, Xue R, et al. Autophagy induced by suberoylanilide hydroxamic acid in Hela S3 cells involves inhibition of protein kinase B and up-regulation of Beclin 1. Int J Biochem Cell Biol. 2008;40(2):272-283.

26. Itoh T, Ito Y, Ohguchi K, et al. Eupalinin A isolated from Eupatorium chinense L. induces autophagocytosis in human leukemia HL60 cells. Bioorg Med Chem. 2008 Jan 15;16(2):721-731.

27. Ostenfeld MS, Hoyer-Hansen M, Bastholm L, et al. Anti-cancer agent siramesine is a lysosomotropic detergent that induces cytoprotective autophagosome accumulation. Autophagy. 2008 May;4(4):487-499.

28. Song KS, Kim JS, Yun EJ, et al. Rottlerin induces autophagy and apoptotic cell death through a PKC-delta-independent pathway in HT1080 human fibrosarcoma cells: the protective role of autophagy in apoptosis. Autophagy. 2008 Jul;4(5):650-658.

29. Wang M, Tan W, Zhou J, et al. A small molecule inhibitor of isoprenylcysteine carboxymethyltransferase induces autophagic cell death in PC3 prostate cancer cells. J Biol Chem. 2008 Jul 4;283(27):18678-18684.

30. Pan J, Chen B, Su CH, et al. Autophagy induced by farnesyltransferase inhibitors in cancer cells. Cancer Biol Ther. 2008 Oct;7(10):1679-1684.

31. Yoon SY, Choi JE, Kweon HS, et al. Okadaic acid increases autophagosomes in rat neurons: implications for Alzheimer's disease. J Neurosci Res. 2008 Nov 1;86(14):3230-3239.

32. Sy LK, Yan SC, Lok CN, et al. Timosaponin A-III induces autophagy preceding mitochondria-mediated apoptosis in HeLa cancer cells. Cancer Res. 2008 Dec 15;68(24):10229-10237.

33. Turcotte S, Chan DA, Sutphin PD, et al. A molecule targeting VHL-deficient renal cell carcinoma that induces autophagy. Cancer Cell. 2008 Jul 8;14(1):90-102.

34. Wang J, Lian H, Zhao Y, et al. Vitamin D3 induces autophagy of human myeloid leukemia cells. J Biol Chem. 2008 Sep 12;283(37):25596-25605.

35. Williams A, Sarkar S, Cuddon P, et al. Novel targets for Huntington's disease in an mTOR-independent autophagy pathway. Nat Chem Biol. 2008 May;4(5):295-305.

36. Winter G, Hazan R, Bakalinsky AT, et al. Caffeine induces macroautophagy and confers a cytocidal effect on food spoilage yeast in combination with benzoic acid. Autophagy. 2008 Jan;4(1):28-36.

37. Wu WK, Wu YC, Yu L, et al. Induction of autophagy by proteasome inhibitor is associated with proliferative arrest in colon cancer cells. Biochem Biophys Res Commun. 2008 Sep 19;374(2):258-263.

38. Chen YJ, Huang WP, Yang YC, et al. Platonin induces autophagy-associated cell death in human leukemia cells. Autophagy. 2009 Feb;5(2):173-183.

39. Coward J, Ambrosini G, Musi E, et al. Safingol (L-threo-sphinganine) induces autophagy in solid tumor cells through inhibition of PKC and the PI3-kinase pathway. Autophagy. 2009 Feb;5(2):184-193.

40. Heiseke A, Aguib Y, Riemer C, et al. Lithium induces clearance of protease resistant prion protein in prion-infected cells by induction of autophagy. J Neurochem. 2009 Apr;109(1):25-34.

41. Armour SM, Baur JA, Hsieh SN, et al. Inhibition of mammalian S6 kinase by resveratrol suppresses autophagy. Aging (Albany NY). 2009 Jun 3;1(6):515-528.

42. Balgi AD, Fonseca BD, Donohue E, et al. Screen for chemical modulators of autophagy reveals novel therapeutic inhibitors of mTORC1 signaling. PLoS One. 2009 Sep 22;4(9):e7124.

43. Eisenberg T, Knauer H, Schauer A, et al. Induction of autophagy by spermidine promotes longevity. Nat Cell Biol. 2009 Nov;11(11):1305-1314.

44. Fu J, Shao CJ, Chen FR, et al. Autophagy induced by valproic acid is associated with oxidative stress in glioma cell lines. Neuro Oncol. 2010 Apr;12(4):328-340.

45. Laane E, Tamm KP, Buentke E, et al. Cell death induced by dexamethasone in lymphoid leukemia is mediated through initiation of autophagy. Cell Death Differ. 2009 Jul;16(7):1018-1029.

46. Lian S, Su H, Zhao BX, et al. Synthesis and discovery of pyrazole-5-carbohydrazide N-glycosides as inducer of autophagy in A549 lung cancer cells. Bioorg Med Chem. 2009 Oct 15;17(20):7085-7092.

47. Milano V, Piao Y, LaFortune T, et al. Dasatinib-induced autophagy is enhanced in combination with temozolomide in glioma. Mol Cancer Ther. 2009 Feb;8(2):394-406.

48. Watanabe M, Adachi S, Matsubara H, et al. Induction of autophagy in malignant rhabdoid tumor cells by the histone deacetylase inhibitor FK228 through AIF translocation. Int J Cancer. 2009 Jan 1;124(1):55-67.

49. Yuk JM, Shin DM, Lee HM, et al. Vitamin D3 induces autophagy in human monocytes/macrophages via cathelicidin. Cell Host Microbe. 2009 Sep 17;6(3):231-243.

50. Periyasamy-Thandavan S, Jackson WH, Samaddar JS, et al. Bortezomib blocks the catabolic process of autophagy via a cathepsin-dependent mechanism, affects endoplasmic reticulum stress and induces caspase-dependent cell death in antiestrogen-sensitive and resistant ER+ breast cancer cells. Autophagy. 2010 Jan;6(1):19-35.

51. Riedel M, Goldbaum O, Schwarz L, et al. 17-AAG induces cytoplasmic alpha-synuclein aggregate clearance by induction of autophagy. PLoS One. 2010 Jan 18;5(1):e8753.

52. Shintani T, Yamazaki F, Katoh T, et al. Glucosamine induces autophagy via an mTOR-independent pathway. Biochem Biophys Res Commun. 2010 Jan 22;391(4):1775-1779.

53. Puissant A, Robert G, Fenouille N, et al. Resveratrol promotes autophagic cell death in chronic myelogenous leukemia cells via JNK-mediated p62/SQSTM1 expression and AMPK activation. Cancer Res. 2010 Feb 1;70(3):1042-1052.

54. Xiong HY, Guo XL, Bu XX, et al. Autophagic cell death induced by 5-FU in Bax or PUMA deficient human colon cancer cell. Cancer Lett. 2010 Feb 1;288(1):68-74.

55. Hwang J, Lee S, Lee JT, et al. Gangliosides induce autophagic cell death in astrocytes. Br J Pharmacol. 2010 Feb 1;159(3):586-603.

56. Choi IK, Cho YS, Jung HJ, et al. Autophagonizer, a novel synthetic small molecule, induces autophagic cell death. Biochem Biophys Res Commun. 2010 Mar 19;393(4):849-854.

57. Carr G, Williams DE, Diaz-Marrero AR, et al. Bafilomycins produced in culture by Streptomyces spp. isolated from marine habitats are potent inhibitors of autophagy. J Nat Prod. 2010 Mar 26;73(3):422-427.

58. Belloni D, Veschini L, Foglieni C, et al. Bortezomib induces autophagic death in proliferating human endothelial cells. Exp Cell Res. 2010 Apr 1;316(6):1010-1018.

59. Zhao L, Zhu Y, Wang D, et al. Morphine induces Beclin 1- and ATG5-dependent autophagy in human neuroblastoma SH-SY5Y cells and in the rat hippocampus. Autophagy. 2010 Apr;6(3):386-394.

60. Du J, Martin SM, Levine M, et al. Mechanisms of ascorbate-induced cytotoxicity in pancreatic cancer. Clin Cancer Res. 2010 Jan 15;16(2):509-520.

61. Karim MR, Fujimura S, Kadowaki M. Vitamin E as a novel enhancer of macroautophagy in rat hepatocytes and H4-II-E cells. Biochem Biophys Res Commun. 2010 Apr 16;394(4):981-987.

62. Yamamoto M, Suzuki SO, Himeno M. Resveratrol-induced autophagy in human U373 glioma cells. Oncol Lett. 2010 May;1(3):489-493.

63. Beljanski V, Knaak C, Smith CD. A novel sphingosine kinase inhibitor induces autophagy in tumor cells. J Pharmacol Exp Ther. 2010 May;333(2):454-464.

64. Yang F, Gao YH, Wu KW, et al. A novel sesquiterpene Hirsutanol A induces autophagical cell death in human hepatocellular carcinoma cells by increasing reactive oxygen species. Chin J Cancer. 2010 Jul;29(7):655-660.

65. Hidvegi T, Ewing M, Hale P, et al. An autophagy-enhancing drug promotes degradation of mutant α1-antitrypsin Z and reduces hepatic fibrosis. Science. 2010;329(5988):229-232.

66. Pan J, Cheng C, Verstovsek S, et al. The BH3-mimetic GX15-070 induces autophagy, potentiates the cytotoxicity of carboplatin and 5-fluorouracil in esophageal carcinoma cells. Cancer Lett. 2010 Jul 28;293(2):167-174.

67. Suh Y, Afaq F, Khan N, et al. Fisetin induces autophagic cell death through suppression of mTOR signaling pathway in prostate cancer cells. Carcinogenesis. 2010 Aug;31(8):1424-1433.

68. Hwang MS, Baek WK. Glucosamine induces autophagic cell death through the stimulation of ER stress in human glioma cancer cells. Biochem Biophys Res Commun. 2010 Aug 13;399(1):111-116.

69. Li DD, Guo JF, Huang JJ, et al. Rhabdastrellic acid-A induced autophagy-associated cell death through blocking Akt pathway in human cancer cells. PLoS One. 2010 Aug 17;5(8):e12176.

70. Cao BY, Yang YP, Luo WF, et al. Paeoniflorin, a potent natural compound, protects PC12 cells from MPP+ and acidic damage via autophagic pathway. J Ethnopharmacol. 2010 Aug 19;131(1):122-129.

71. Rodriguez-Navarro JA, Rodriguez L, Casarejos MJ, et al. Trehalose ameliorates dopaminergic and tau pathology in parkin deleted/tau overexpressing mice through autophagy activation. Neurobiol Dis. 2010 Sep;39(3):423-438.

72. Son MJ, Lee SB, Byun YJ, et al. Sodium nitroprusside induces autophagic cell death in glutathione-depleted osteoblasts. J Biochem Mol Toxicol. 2010 Sep-Oct;24(5):313-322.

73. Underwood BR, Imarisio S, Fleming A, et al. Antioxidants can inhibit basal autophagy and enhance neurodegeneration in models of polyglutamine disease. Hum Mol Genet. 2010 Sep 1;19(17):3413-3429.

74. Tsvetkov AS, Miller J, Arrasate M, et al. A small-molecule scaffold induces autophagy in primary neurons and protects against toxicity in a Huntington disease model. Proc Natl Acad Sci U S A. 2010 Sep 28;107(39):16982-16987.

75. Nakamura M, Kikukawa Y, Takeya M, et al. Clarithromycin attenuates autophagy in myeloma cells. Int J Oncol. 2010 Oct;37(4):815-820.

76. Xia X, Kar R, Gluhak-Heinrich J, et al. Glucocorticoid-induced autophagy in osteocytes. J Bone Miner Res. 2010 Nov;25(11):2479-2488.

77. Li J, Wang XL, Fang YC, et al. Tephrosin-induced autophagic cell death in A549 non-small cell lung cancer cells. J Asian Nat Prod Res. 2010 Nov;12(11):992-1000.

78. Le XF, Mao W, Lu Z, et al. Dasatinib induces autophagic cell death in human ovarian cancer. Cancer. 2010 Nov 1;116(21):4980-4990.

79. Wang L, Dong Z, Huang B, et al. Distinct patterns of autophagy evoked by two benzoxazine derivatives in vascular endothelial cells. Autophagy. 2010 Nov;6(8):1115-1124.

80. Bolt AM, Douglas RM, Klimecki WT. Arsenite exposure in human lymphoblastoid cell lines induces autophagy and coordinated induction of lysosomal genes. Toxicol Lett. 2010 Nov 30;199(2):153-159.

81. Smith DM, Patel S, Raffoul F, et al. Arsenic trioxide induces a beclin-1-independent autophagic pathway via modulation of SnoN/SkiL expression in ovarian carcinoma cells. Cell Death Differ. 2010 Dec;17(12):1867-1881.

82. Li X, Fan Z. The epidermal growth factor receptor antibody cetuximab induces autophagy in cancer cells by downregulating HIF-1alpha and Bcl-2 and activating the beclin 1/hVps34 complex. Cancer Res. 2010 Jul 15;70(14):5942-5952.

83. Chresta CM, Davies BR, Hickson I, et al. AZD8055 is a potent, selective, and orally bioavailable ATP-competitive mammalian target of rapamycin kinase inhibitor with in vitro and in vivo antitumor activity. Cancer Res. 2010 Jan 1;70(1):288-298.

84. Zhang XQ, Huang XF, Hu XB, et al. Apogossypolone, a novel inhibitor of antiapoptotic Bcl-2 family proteins, induces autophagy of PC-3 and LNCaP prostate cancer cells in vitro. Asian J Androl. 2010 Sep;12(5):697-708.

85. Han W, Pan H, Chen Y, et al. EGFR tyrosine kinase inhibitors activate autophagy as a cytoprotective response in human lung cancer cells. PLoS One. 2011;6(6):e18691.

86. Lian J, Wu X, He F, et al. A natural BH3 mimetic induces autophagy in apoptosis-resistant prostate cancer via modulating Bcl-2–Beclin1 interaction at endoplasmic reticulum. Cell Death & Differentiation. 2010;18(1):60-71.

87. Abe A, Yamada H, Moriya S, et al. The β-carboline alkaloid harmol induces cell death via autophagy but not apoptosis in human non-small cell lung cancer A549 cells. Biological Pharmaceutical Bulletin. 2011;34(8):1264-1272.

88. Vucicevic L, Misirkic M, Janjetovic K, et al. Compound C induces protective autophagy in cancer cells through AMPK inhibition-independent blockade of Akt/mTOR pathway. Autophagy. 2011 Jan;7(1):40-50.

89. Jo YK, Park SJ, Shin JH, et al. ARP101, a selective MMP-2 inhibitor, induces autophagy-associated cell death in cancer cells. Biochem Biophys Res Commun. 2011 Jan 28;404(4):1039-1043.

90. Liu WT, Lin CH, Hsiao M, et al. Minocycline inhibits the growth of glioma by inducing autophagy. Autophagy. 2011 Feb;7(2):166-175.

91. Morselli E, Marino G, Bennetzen MV, et al. Spermidine and resveratrol induce autophagy by distinct pathways converging on the acetylproteome. J Cell Biol. 2011 Feb 21;192(4):615-629.

92. Carew JS, Espitia CM, Esquivel JA, 2nd, et al. Lucanthone is a novel inhibitor of autophagy that induces cathepsin D-mediated apoptosis. J Biol Chem. 2011 Feb 25;286(8):6602-6613.

93. Cao DJ, Wang ZV, Battiprolu PK, et al. Histone deacetylase (HDAC) inhibitors attenuate cardiac hypertrophy by suppressing autophagy. Proc Natl Acad Sci U S A. 2011 Mar 8;108(10):4123-4128.

94. Lin JF, Lin YC, Lin YH, et al. Zoledronic acid induces autophagic cell death in human prostate cancer cells. J Urol. 2011 Apr;185(4):1490-1496.

95. Cloonan SM, Williams DC. The antidepressants maprotiline and fluoxetine induce Type II autophagic cell death in drug-resistant Burkitt's lymphoma. Int J Cancer. 2011 Apr 1;128(7):1712-1723.

96. Tang Y, Chen Y, Jiang H, et al. Short-chain fatty acids induced autophagy serves as an adaptive strategy for retarding mitochondria-mediated apoptotic cell death. Cell Death Differ. 2011 Apr;18(4):602-618.

97. Wasko BM, Dudakovic A, Hohl RJ. Bisphosphonates induce autophagy by depleting geranylgeranyl diphosphate. J Pharmacol Exp Ther. 2011 May;337(2):540-546.

98. Lomonaco SL, Finniss S, Xiang C, et al. Cilengitide induces autophagy-mediated cell death in glioma cells. Neuro Oncol. 2011 Aug;13(8):857-865.

99. Wang K, Liu R, Li J, et al. Quercetin induces protective autophagy in gastric cancer cells: involvement of Akt-mTOR- and hypoxia-induced factor 1alpha-mediated signaling. Autophagy. 2011 Sep;7(9):966-978.

100. Toepfer N, Childress C, Parikh A, et al. Atorvastatin induces autophagy in prostate cancer PC3 cells through activation of LC3 transcription. Cancer Biol Ther. 2011 Oct 15;12(8):691-699.

101. Farkas T, Daugaard M, Jaattela M. Identification of small molecule inhibitors of phosphatidylinositol 3-kinase and autophagy. J Biol Chem. 2011 Nov 11;286(45):38904-38912.

102. Hu S, Xi G, Jin H, et al. Thrombin-induced autophagy: a potential role in intracerebral hemorrhage. Brain Res. 2011 Nov 18;1424:60-66.

103. Tian Y, Bustos V, Flajolet M, et al. A small-molecule enhancer of autophagy decreases levels of Abeta and APP-CTF via Atg5-dependent autophagy pathway. FASEB J. 2011 Jun;25(6):1934-1942.

104. Campbell GR, Spector SA. Hormonally active vitamin D3 (1alpha,25-dihydroxycholecalciferol) triggers autophagy in human macrophages that inhibits HIV-1 infection. J Biol Chem. 2011 May 27;286(21):18890-18902.

105. Renna M, Schaffner C, Brown K, et al. Azithromycin blocks autophagy and may predispose cystic fibrosis patients to mycobacterial infection. J Clin Invest. 2011 Sep;121(9):3554-3563.

106. Saiki S, Sasazawa Y, Imamichi Y, et al. Caffeine induces apoptosis by enhancement of autophagy via PI3K/Akt/mTOR/p70S6K inhibition. Autophagy. 2011 Feb;7(2):176-187.

107. Vingtdeux V, Chandakkar P, Zhao H, et al. Novel synthetic small-molecule activators of AMPK as enhancers of autophagy and amyloid-beta peptide degradation. FASEB J. 2011 Jan;25(1):219-231.

108. Wang RC, Levine B. Calcipotriol induces autophagy in HeLa cells and keratinocytes. J Invest Dermatol. 2011 Apr;131(4):990-993.

109. Tomic T, Botton T, Cerezo M, et al. Metformin inhibits melanoma development through autophagy and apoptosis mechanisms. Cell Death & Disease. 2011 Sep;2(9):e199.

110. Viola G, Bortolozzi R, Hamel E, et al. MG-2477, a new tubulin inhibitor, induces autophagy through inhibition of the Akt/mTOR pathway and delayed apoptosis in A549 cells. Biochem Pharmacol. 2012 Jan 1;83(1):16-26.

111. Lam KK, Zheng X, Forestieri R, et al. Nitazoxanide stimulates autophagy and inhibits mTORC1 signaling and intracellular proliferation of Mycobacterium tuberculosis. PLoS Pathog. 2012;8(5):e1002691.

112. Li C, Johnson DE. Bortezomib induces autophagy in head and neck squamous cell carcinoma cells via JNK activation. Cancer Lett. 2012 Jan 1;314(1):102-107.

113. Lu JH, Tan JQ, Durairajan SS, et al. Isorhynchophylline, a natural alkaloid, promotes the degradation of alpha-synuclein in neuronal cells via inducing autophagy. Autophagy. 2012 Jan;8(1):98-108. (Erratum in Autophagy. 2012; 2018(2015): 2864-2866.).

114. Yuan L, Li Y, Zou C, et al. Synthesis and in vitro antitumor activity of asperphenamate derivatives as autophagy inducer. Bioorg Med Chem Lett. 2012 Mar 15;22(6):2216-2220.

115. Zhang T, Li Y, Park KA, et al. Cucurbitacin induces autophagy through mitochondrial ROS production which counteracts to limit caspase-dependent apoptosis. Autophagy. 2012 Apr;8(4):559-576.

116. Tong Y, Liu YY, You LS, et al. Perifosine induces protective autophagy and upregulation of ATG5 in human chronic myelogenous leukemia cells in vitro. Acta Pharmacol Sin. 2012 Apr;33(4):542-550.

117. Congdon EE, Wu JW, Myeku N, et al. Methylthioninium chloride (methylene blue) induces autophagy and attenuates tauopathy in vitro and in vivo. Autophagy. 2012 Apr;8(4):609-622.

118. Zhang Q, Yang YJ, Wang H, et al. Autophagy activation: a novel mechanism of atorvastatin to protect mesenchymal stem cells from hypoxia and serum deprivation via AMP-activated protein kinase/mammalian target of rapamycin pathway. Stem Cells Dev. 2012 May 20;21(8):1321-1332.

119. McAfee Q, Zhang Z, Samanta A, et al. Autophagy inhibitor Lys05 has single-agent antitumor activity and reproduces the phenotype of a genetic autophagy deficiency. Proc Natl Acad Sci U S A. 2012 May 22;109(21):8253-8258.

120. Zhao Y, Chen H, Shang Z, et al. SD118-xanthocillin X (1), a novel marine agent extracted from Penicillium commune, induces autophagy through the inhibition of the MEK/ERK pathway. Mar Drugs. 2012 Jun;10(6):1345-1359.

121. Song YM, Song SO, Jung YK, et al. Dimethyl sulfoxide reduces hepatocellular lipid accumulation through autophagy induction. Autophagy. 2012 Jul 1;8(7):1085-1097.

122. Gibellini L, De Biasi S, Pinti M, et al. The protease inhibitor atazanavir triggers autophagy and mitophagy in human preadipocytes. AIDS. 2012 Oct 23;26(16):2017-2026.

123. Zhou C, Zhou J, Sheng F, et al. The heme oxygenase-1 inhibitor ZnPPIX induces non-canonical, Beclin 1-independent, autophagy through p38 MAPK pathway. Acta Biochim Biophys Sin (Shanghai). 2012 Oct;44(10):815-822.

124. Singh BN, Kumar D, Shankar S, et al. Rottlerin induces autophagy which leads to apoptotic cell death through inhibition of PI3K/Akt/mTOR pathway in human pancreatic cancer stem cells. Biochem Pharmacol. 2012 Nov 1;84(9):1154-1163.

125. Shin JH, Park SJ, Kim ES, et al. Sertindole, a potent antagonist at dopamine D2 receptors, induces autophagy by increasing reactive oxygen species in SH-SY5Y neuroblastoma cells. 2012;35(7):1069-1075.

126. Li Y, Hahn T, Garrison K, et al. The vitamin E analogue alpha-TEA stimulates tumor autophagy and enhances antigen cross-presentation. Cancer Res. 2012 Jul 15;72(14):3535-3545.

127. Tan SH, Shui G, Zhou J, et al. Induction of autophagy by palmitic acid via protein kinase C-mediated signaling pathway independent of mTOR (mammalian target of rapamycin). J Biol Chem. 2012 Apr 27;287(18):14364-14376.

128. Wang Z, Zhang J, Wang Y, et al. Matrine, a novel autophagy inhibitor, blocks trafficking and the proteolytic activation of lysosomal proteases. Carcinogenesis. 2013 Jan;34(1):128-138.

129. Zhou J, Hu SE, Tan SH, et al. Andrographolide sensitizes cisplatin-induced apoptosis via suppression of autophagosome-lysosome fusion in human cancer cells. Autophagy. 2012 Mar;8(3):338-349.

130. Shi WY, Xiao D, Wang L, et al. Therapeutic metformin/AMPK activation blocked lymphoma cell growth via inhibition of mTOR pathway and induction of autophagy. Cell Death Dis. 2012 Mar 1;3(3):e275.

131. Chu C, Zhang X, Ma W, et al. Induction of autophagy by a novel small molecule improves abeta pathology and ameliorates cognitive deficits. PLoS One. 2013;8(6):e65367.

132. Xiao K, Jiang J, Guan C, et al. Curcumin induces autophagy via activating the AMPK signaling pathway in lung adenocarcinoma cells. J Pharmacol Sci. 2013;123(2):102-109.

133. Maria E Solesio SS-A, Joaquin Jordan, Maria F Galindo. 3-Nitropropionic acid induces autophagy by forming mitochondrial permeability transition pores rather than activatiing the mitochondrial fission pathway. British Journal of Pharmacology2013. p. 63-75.

134. Tu YJ, Fan X, Yang X, et al. Evodiamine activates autophagy as a cytoprotective response in murine Lewis lung carcinoma cells. Oncol Rep. 2013 Feb;29(2):481-490.

135. Chen M, Du Y, Qui M, et al. Ophiopogonin B-induced autophagy in non-small cell lung cancer cells via inhibition of the PI3K/Akt signaling pathway. Oncol Rep. 2013 Feb;29(2):430-436.

136. Lin JF, Tsai TF, Liao PC, et al. Benzyl isothiocyanate induces protective autophagy in human prostate cancer cells via inhibition of mTOR signaling. Carcinogenesis. 2013 Feb;34(2):406-414.

137. Lin JC, Huang WP, Liu CL, et al. Sorafenib induces autophagy in human myeloid dendritic cells and prolongs survival of skin allografts. Transplantation. 2013 Mar 27;95(6):791-800.

138. Wu Y, Wang X, Guo H, et al. Synthesis and screening of 3-MA derivatives for autophagy inhibitors. Autophagy. 2013 Apr;9(4):595-603.

139. Choi SI, Kim KS, Oh JY, et al. Melatonin induces autophagy via an mTOR-dependent pathway and enhances clearance of mutant-TGFBIp. J Pineal Res. 2013 May;54(4):361-372.

140. Zhang L, Cui L, Zhou G, et al. Pterostilbene, a natural small-molecular compound, promotes cytoprotective macroautophagy in vascular endothelial cells. J Nutr Biochem. 2013 May;24(5):903-911.

141. Gurpinar E, Grizzle WE, Shacka JJ, et al. A novel sulindac derivative inhibits lung adenocarcinoma cell growth through suppression of Akt/mTOR signaling and induction of autophagy. Mol Cancer Ther. 2013 May;12(5):663-674.

142. Rovito D, Giordano C, Vizza D, et al. Omega-3 PUFA ethanolamides DHEA and EPEA induce autophagy through PPARgamma activation in MCF-7 breast cancer cells. J Cell Physiol. 2013 Jun;228(6):1314-1322.

143. Yu HC, Lin CS, Tai WT, et al. Nilotinib induces autophagy in hepatocellular carcinoma through AMPK activation. J Biol Chem. 2013 Jun 21;288(25):18249-18259.

144. Wong VK, Li T, Law BY, et al. Saikosaponin-d, a novel SERCA inhibitor, induces autophagic cell death in apoptosis-defective cells. Cell Death Dis. 2013 Jul 11;4:e720.

145. Wang Q, Zhu J, Zhang K, et al. Induction of cytoprotective autophagy in PC-12 cells by cadmium. Biochem Biophys Res Commun. 2013 Aug 16;438(1):186-192.

146. Inoue H, Hase K, Segawa A, et al. H89 (N-[2-p-bromocinnamylamino-ethyl]-5-isoquinolinesulphonamide) induces autophagy independently of protein kinase A inhibition. Eur J Pharmacol. 2013 Aug 15;714(1-3):170-177.

147. Jangamreddy JR, Ghavami S, Grabarek J, et al. Salinomycin induces activation of autophagy, mitophagy and affects mitochondrial polarity: differences between primary and cancer cells. Biochim Biophys Acta. 2013 Sep;1833(9):2057-2069.

148. Li YY, Lam SK, Mak JC, et al. Erlotinib-induced autophagy in epidermal growth factor receptor mutated non-small cell lung cancer. Lung Cancer. 2013 Sep;81(3):354-361.

149. Racoma IO, Meisen WH, Wang QE, et al. Thymoquinone inhibits autophagy and induces cathepsin-mediated, caspase-independent cell death in glioblastoma cells. PLoS One. 2013;8(9):e72882.

150. Kallifatidis G, Hoepfner D, Jaeg T, et al. The marine natural product manzamine A targets vacuolar ATPases and inhibits autophagy in pancreatic cancer cells. Mar Drugs. 2013 Sep 17;11(9):3500-3516.

151. Wang Y, Wang JW, Xiao X, et al. Piperlongumine induces autophagy by targeting p38 signaling. Cell Death Dis. 2013 Oct 3;4:e824.

152. Wu AG, Wong VK, Xu SW, et al. Onjisaponin B derived from Radix Polygalae enhances autophagy and accelerates the degradation of mutant alpha-synuclein and huntingtin in PC-12 cells. Int J Mol Sci. 2013 Nov 15;14(11):22618-22641.

153. Gong F, Peng X, Sang Y, et al. Dichloroacetate induces protective autophagy in LoVo cells: involvement of cathepsin D/thioredoxin-like protein 1 and Akt-mTOR-mediated signaling. Cell Death Dis. 2013 Nov 7;4:e913.

154. Chen YY, Sun LQ, Wang BA, et al. Palmitate induces autophagy in pancreatic beta-cells via endoplasmic reticulum stress and its downstream JNK pathway. Int J Mol Med. 2013 Dec;32(6):1401-1406.

155. Kim Y, Kim YS, Kim DE, et al. BIX-01294 induces autophagy-associated cell death via EHMT2/G9a dysfunction and intracellular reactive oxygen species production. Autophagy. 2013 Dec;9(12):2126-2139.

156. Leng S, Hao Y, Du D, et al. Ursolic acid promotes cancer cell death by inducing Atg5-dependent autophagy. Int J Cancer. 2013 Dec 15;133(12):2781-2790.

157. Kumar D, Shankar S, Srivastava RK. Rottlerin-induced autophagy leads to the apoptosis in breast cancer stem cells: molecular mechanisms. Molecular Cancer. 2013 Dec 23;12:171.

158. Wei YM, Li X, Xu M, et al. Enhancement of Autophagy by Simvastatin through Inhibition of Rac1-mTOR Signaling Pathway in Coronary Arterial Myocytes. Cell Physiol Biochem. 2013;31(6):925-937.

159. Castillo K, Nassif M, Valenzuela V, et al. Trehalose delays the progression of amyotrophic lateral sclerosis by enhancing autophagy in motoneurons. Autophagy. 2013 Sep;9(9):1308-1320.

160. Fant X, Durieu E, Chicanne G, et al. cdc-like/dual-specificity tyrosine phosphorylation-regulated kinases inhibitor leucettine L41 induces mTOR-dependent autophagy: implication for Alzheimer's disease. Mol Pharmacol. 2014 Mar;85(3):441-450.

161. Liu Y, Shoji-Kawata S, Sumpter RM, Jr., et al. Autosis is a Na+,K+-ATPase-regulated form of cell death triggered by autophagy-inducing peptides, starvation, and hypoxia-ischemia. Proc Natl Acad Sci U S A. 2013 Dec 17;110(51):20364-20371.

162. MacCallum SF, Groves MJ, James J, et al. Dysregulation of autophagy in chronic lymphocytic leukemia with the small-molecule Sirtuin inhibitor Tenovin-6. Sci Rep. 2013;3:1275.

163. Ragazzoni Y, Desideri M, Gabellini C, et al. The thiazole derivative CPTH6 impairs autophagy. Cell Death Dis. 2013 Mar 7;4:e524.

164. Shoji-Kawata S, Sumpter R, Leveno M, et al. Identification of a candidate therapeutic autophagy-inducing peptide. Nature. 2013 Feb 14;494(7436):201-206.

165. Zhou GZ, Zhang SN, Zhang L, et al. A synthetic curcumin derivative hydrazinobenzoylcurcumin induces autophagy in A549 lung cancer cells. Pharm Biol. 2014 Jan;52(1):111-116.

166. Makhov P, Golovine K, Teper E, et al. Piperlongumine promotes autophagy via inhibition of Akt/mTOR signalling and mediates cancer cell death. Br J Cancer. 2014 Feb 18;110(4):899-907.

167. Yun SM, Jung JH, Jeong SJ, et al. Tanshinone IIA induces autophagic cell death via activation of AMPK and ERK and inhibition of mTOR and p70 S6K in KBM-5 leukemia cells. Phytother Res. 2014 Mar;28(3):458-464.

168. Zhang Q, Zhang Y, Zhang P, et al. Hexokinase II inhibitor, 3-BrPA induced autophagy by stimulating ROS formation in human breast cancer cells. Genes Cancer. 2014 Mar;5(3-4):100-112.

169. Zhang X, Chen S, Song L, et al. MTOR-independent, autophagic enhancer trehalose prolongs motor neuron survival and ameliorates the autophagic flux defect in a mouse model of amyotrophic lateral sclerosis. Autophagy. 2014 Apr;10(4):588-602.

170. Xu ZH, Hang JB, Hu JA, et al. Gefitinib, an EGFR tyrosine kinase inhibitor, activates autophagy through AMPK in human lung cancer cells. J Buon. 2014 Apr-Jun;19(2):466-473.

171. Yuan G, Yan SF, Xue H, et al. Cucurbitacin I induces protective autophagy in glioblastoma in vitro and in vivo. J Biol Chem. 2014 Apr 11;289(15):10607-10619.

172. Wang FW, Wang SQ, Zhao BX, et al. Discovery of 2'-hydroxychalcones as autophagy inducer in A549 lung cancer cells. Org Biomol Chem. 2014 May 21;12(19):3062-3070.

173. Shao S, Li S, Qin Y, et al. Spautin-1, a novel autophagy inhibitor, enhances imatinib-induced apoptosis in chronic myeloid leukemia. Int J Oncol. 2014 May;44(5):1661-1668.

174. Yao XF, Cao J, Xu LM, et al. Perfluorooctane sulfonate blocked autophagy flux and induced lysosome membrane permeabilization in HepG2 cells. Food Chem Toxicol. 2014 May;67:96-104.

175. Lao Y, Wan G, Liu Z, et al. The natural compound oblongifolin C inhibits autophagic flux and enhances antitumor efficacy of nutrient deprivation. Autophagy. 2014 May;10(5):736-749.

176. Chen LL, Song JX, Lu JH, et al. Corynoxine, a natural autophagy enhancer, promotes the clearance of alpha-synuclein via Akt/mTOR pathway. J Neuroimmune Pharmacol. 2014 Jun;9(3):380-387.

177. Poluzzi C, Casulli J, Goyal A, et al. Endorepellin evokes autophagy in endothelial cells. J Biol Chem. 2014 Jun 6;289(23):16114-16128.

178. Kim D-G, Jung KH, Lee D-G, et al. 20 (S)-Ginsenoside Rg3 is a novel inhibitor of autophagy and sensitizes hepatocellular carcinoma to doxorubicin. Oncotarget. 2014;5(12):4438.

179. Zou Y, Wang Q, Li B, et al. Temozolomide induces autophagy via ATMAMPKULK1 pathways in glioma. Mol Med Rep. 2014 Jul;10(1):411-416.

180. Min H, Xu M, Chen ZR, et al. Bortezomib induces protective autophagy through AMP-activated protein kinase activation in cultured pancreatic and colorectal cancer cells. Cancer Chemother Pharmacol. 2014 Jul;74(1):167-176.

181. Chen YJ, Chi CW, Su WC, et al. Lapatinib induces autophagic cell death and inhibits growth of human hepatocellular carcinoma. Oncotarget. 2014 Jul 15;5(13):4845-4854.

182. Cao B, Li J, Zhou X, et al. Clioquinol induces pro-death autophagy in leukemia and myeloma cells by disrupting the mTOR signaling pathway. Sci Rep. 2014 Jul 18;4:5749.

183. Hsieh MT, Chen HP, Lu CC, et al. The novel pterostilbene derivative ANK-199 induces autophagic cell death through regulating PI3 kinase class III/beclin 1/Atgrelated proteins in cisplatinresistant CAR human oral cancer cells. Int J Oncol. 2014 Aug;45(2):782-794.

184. Zhu XX, Yao XF, Jiang LP, et al. Sodium arsenite induces ROS-dependent autophagic cell death in pancreatic beta-cells. Food Chem Toxicol. 2014 Aug;70:144-150.

185. Ristic B, Bosnjak M, Arsikin K, et al. Idarubicin induces mTOR-dependent cytotoxic autophagy in leukemic cells. Exp Cell Res. 2014 Aug 1;326(1):90-102.

186. Saez-Atienzar S, Bonet-Ponce L, Blesa JR, et al. The LRRK2 inhibitor GSK2578215A induces protective autophagy in SH-SY5Y cells: involvement of Drp-1-mediated mitochondrial fission and mitochondrial-derived ROS signaling. Cell Death Dis. 2014 Aug 14;5:e1368.

187. Hao W, Zhang X, Zhao W, et al. Psoralidin induces autophagy through ROS generation which inhibits the proliferation of human lung cancer A549 cells. PeerJ. 2014;2:e555.

188. Li CL, Wei HL, Chen J, et al. Arsenic trioxide induces autophagy and antitumor effects in Burkitt's lymphoma Raji cells. Oncol Rep. 2014 Oct;32(4):1557-1563.

189. Aryal P, Kim K, Park PH, et al. Baicalein induces autophagic cell death through AMPK/ULK1 activation and downregulation of mTORC1 complex components in human cancer cells. FEBS J. 2014 Oct;281(20):4644-4658.

190. Mathew TS, Ferris RK, Downs RM, et al. Caffeine promotes autophagy in skeletal muscle cells by increasing the calcium-dependent activation of AMP-activated protein kinase. Biochem Biophys Res Commun. 2014 Oct 24;453(3):411-418.

191. Liu W, Huang S, Chen Z, et al. Temsirolimus, the mTOR inhibitor, induces autophagy in adenoid cystic carcinoma: in vitro and in vivo. Pathol Res Pract. 2014 Nov;210(11):764-769.

192. Dowdle WE, Nyfeler B, Nagel J, et al. Selective VPS34 inhibitor blocks autophagy and uncovers a role for NCOA4 in ferritin degradation and iron homeostasis in vivo. Nat Cell Biol. 2014 Nov;16(11):1069-1079.

193. Sheng Y, Sun B, Guo WT, et al. (4-[6-(4-isopropoxyphenyl)pyrazolo [1,5-a]pyrimidin-3-yl] quinoline) is a novel inhibitor of autophagy. Br J Pharmacol. 2014 Nov;171(21):4970-4980.

194. Oliverio S, Corazzari M, Sestito C, et al. The spermidine analogue GC7 (N1-guanyl-1,7-diamineoheptane) induces autophagy through a mechanism not involving the hypusination of eIF5A. Amino Acids. 2014 Dec;46(12):2767-2776.

195. Lu J, Sun D, Gao S, et al. Cyclovirobuxine D induces autophagy-associated cell death via the Akt/mTOR pathway in MCF-7 human breast cancer cells. J Pharmacol Sci. 2014;125(1):74-82.

196. Wang M, Yu T, Zhu C, et al. Resveratrol triggers protective autophagy through the ceramide/Akt/mTOR pathway in melanoma B16 cells. Nutr Cancer. 2014;66(3):435-440.

197. Akin D, Wang SK, Habibzadegah-Tari P, et al. A novel ATG4B antagonist inhibits autophagy and has a negative impact on osteosarcoma tumors. Autophagy. 2014;10(11):2021-2035.

198. Ginet V, Puyal J, Rummel C, et al. A critical role of autophagy in antileukemia/lymphoma effects of APO866, an inhibitor of NAD biosynthesis. Autophagy. 2014 Apr;10(4):603-617.

199. Goodall ML, Wang T, Martin KR, et al. Development of potent autophagy inhibitors that sensitize oncogenic BRAF V600E mutant melanoma tumor cells to vemurafenib. Autophagy. 2014 Jun;10(6):1120-1136.

200. He JH, Liao XL, Wang W, et al. Apogossypolone, a small-molecule inhibitor of Bcl-2, induces radiosensitization of nasopharyngeal carcinoma cells by stimulating autophagy. Int J Oncol. 2014 Sep;45(3):1099-1108.

201. Kang YL, Saleem MA, Chan KW, et al. Trehalose, an mTOR independent autophagy inducer, alleviates human podocyte injury after puromycin aminonucleoside treatment. PLoS One. 2014;9(11):e113520.

202. Kim J, Park M, Ryu BJ, et al. The Protein Kinase 2 Inhibitor CX-4945 Induces Autophagy in Human Cancer Cell Lines. Bulletin of the Korean Chemical Society. 2014 Oct 20;35(10):2985-2989.

203. Law BY, Chan WK, Xu SW, et al. Natural small-molecule enhancers of autophagy induce autophagic cell death in apoptosis-defective cells. Sci Rep. 2014 Jul 1;4:5510.

204. Lee YZ, Yang CW, Chang HY, et al. Discovery of selective inhibitors of Glutaminase-2, which inhibit mTORC1, activate autophagy and inhibit proliferation in cancer cells. Oncotarget. 2014 Aug 15;5(15):6087-6101.

205. Matarrese P, Garofalo T, Manganelli V, et al. Evidence for the involvement of GD3 ganglioside in autophagosome formation and maturation. Autophagy. 2014 May;10(5):750-765.

206. Ronan B, Flamand O, Vescovi L, et al. A highly potent and selective Vps34 inhibitor alters vesicle trafficking and autophagy. Nat Chem Biol. 2014 Dec;10(12):1013-1019.

207. Savolainen MH, Richie CT, Harvey BK, et al. The beneficial effect of a prolyl oligopeptidase inhibitor, KYP-2047, on alpha-synuclein clearance and autophagy in A30P transgenic mouse. Neurobiol Dis. 2014 Aug;68:1-15.

208. Tu QQ, Zheng RY, Li J, et al. Palmitic acid induces autophagy in hepatocytes via JNK2 activation. Acta Pharmacol Sin. 2014 Apr;35(4):504-512.

209. Feng Y, Ke C, Tang Q, et al. Metformin promotes autophagy and apoptosis in esophageal squamous cell carcinoma by downregulating Stat3 signaling. Cell Death Dis. 2014 Feb 27;5(2):e1088.

210. Wu F, Xu HD, Guan JJ, et al. Rotenone impairs autophagic flux and lysosomal functions in Parkinson's disease. Neuroscience. 2015 Jan 22;284:900-911.

211. Li T, Tang ZH, Xu WS, et al. Platycodin D triggers autophagy through activation of extracellular signal-regulated kinase in hepatocellular carcinoma HepG2 cells. Eur J Pharmacol. 2015 Feb 15;749:81-88.

212. Pietrocola F, Lachkar S, Enot DP, et al. Spermidine induces autophagy by inhibiting the acetyltransferase EP300. Cell Death Differ. 2015 Mar;22(3):509-516.

213. Liu YN, Wang YX, Liu XF, et al. Citreoviridin induces ROS-dependent autophagic cell death in human liver HepG2 cells. Toxicon. 2015 Mar;95:30-37.

214. Wang T, Goodall ML, Gonzales P, et al. Synthesis of improved lysomotropic autophagy inhibitors. J Med Chem. 2015 Apr 9;58(7):3025-3035.

215. Zhang J, Ng S, Wang J, et al. Histone deacetylase inhibitors induce autophagy through FOXO1-dependent pathways. Autophagy. 2015 Apr 3;11(4):629-642.

216. Wang L, Fan J, Lin YS, et al. Glucocorticoids induce autophagy in rat bone marrow mesenchymal stem cells. Mol Med Rep. 2015 Apr;11(4):2711-2716.

217. Zhao R, Chen M, Jiang Z, et al. Platycodin-D Induced Autophagy in Non-Small Cell Lung Cancer Cells via PI3K/Akt/mTOR and MAPK Signaling Pathways. J Cancer. 2015;6(7):623-631.

218. Wang YF, Li T, Tang ZH, et al. Baicalein Triggers Autophagy and Inhibits the Protein Kinase B/Mammalian Target of Rapamycin Pathway in Hepatocellular Carcinoma HepG2 Cells. Phytother Res. 2015 May;29(5):674-679.

219. Mitsuhashi S, Shindo C, Shigetomi K, et al. (+)-Epogymnolactam, a novel autophagy inducer from mycelial culture of Gymnopus sp. Phytochemistry. 2015 Jun;114:163-167.

220. De Amicis F, Aquila S, Morelli C, et al. Bergapten drives autophagy through the up-regulation of PTEN expression in breast cancer cells. Mol Cancer. 2015 Jul 7;14:130.

221. Zhao P, Dou Y, Chen L, et al. SC-III3, a novel scopoletin derivative, induces autophagy of human hepatoma HepG2 cells through AMPK/mTOR signaling pathway by acting on mitochondria. Fitoterapia. 2015 Jul;104:31-40.

222. Arun B, Akar U, Gutierrez-Barrera AM, et al. The PARP inhibitor AZD2281 (Olaparib) induces autophagy/mitophagy in BRCA1 and BRCA2 mutant breast cancer cells. Int J Oncol. 2015 Jul;47(1):262-268.

223. Kim MO, Lee HS, Chin YW, et al. Gartanin induces autophagy through JNK activation which extenuates caspase-dependent apoptosis. Oncol Rep. 2015 Jul;34(1):139-146.

224. Wada S, Kubota Y, Sawa R, et al. Novel autophagy inducers lentztrehaloses A, B and C. J Antibiot (Tokyo). 2015 Aug;68(8):521-529.

225. Lee HR, Shin HK, Park SY, et al. Cilostazol Upregulates Autophagy via SIRT1 Activation: Reducing Amyloid-beta Peptide and APP-CTFbeta Levels in Neuronal Cells. PLoS One. 2015;10(8):e0134486.

226. Wu M, Lao Y, Xu N, et al. Guttiferone K induces autophagy and sensitizes cancer cells to nutrient stress-induced cell death. Phytomedicine. 2015 Sep 15;22(10):902-910.

227. Chauhan S, Ahmed Z, Bradfute SB, et al. Pharmaceutical screen identifies novel target processes for activation of autophagy with a broad translational potential. Nat Commun. 2015 Oct 27;6:8620.

228. Guo J, Huang X, Wang H, et al. Celastrol Induces Autophagy by Targeting AR/miR-101 in Prostate Cancer Cells. PLoS One. 2015;10(10):e0140745.

229. Hsieh MJ, Lin CW, Chiou HL, et al. Dehydroandrographolide, an iNOS inhibitor, extracted from Andrographis paniculata (Burm.f.) Nees, induces autophagy in human oral cancer cells. Oncotarget. 2015 Oct 13;6(31):30831-30849.

230. Borthakur G, Duvvuri S, Ruvolo V, et al. MDM2 Inhibitor, Nutlin 3a, Induces p53 Dependent Autophagy in Acute Leukemia by AMP Kinase Activation. PLoS One. 2015;10(10):e0139254.

231. Wang C, Wang X, Su Z, et al. The novel mTOR inhibitor Torin-2 induces autophagy and downregulates the expression of UHRF1 to suppress hepatocarcinoma cell growth. Oncol Rep. 2015 Oct;34(4):1708-1716.

232. You L, Shou J, Deng D, et al. Crizotinib induces autophagy through inhibition of the STAT3 pathway in multiple lung cancer cell lines. Oncotarget. 2015 Nov 24;6(37):40268-40282.

233. Koehler BC, Jassowicz A, Scherr AL, et al. Pan-Bcl-2 inhibitor Obatoclax is a potent late stage autophagy inhibitor in colorectal cancer cells independent of canonical autophagy signaling. BMC Cancer. 2015 Nov 19;15:919.

234. Khurana A, Roy D, Kalogera E, et al. Quinacrine promotes autophagic cell death and chemosensitivity in ovarian cancer and attenuates tumor growth. Oncotarget. 2015 Nov 3;6(34):36354-36369.

235. Zhang L, Cheng X, Gao Y, et al. Apigenin induces autophagic cell death in human papillary thyroid carcinoma BCPAP cells. Food Funct. 2015 Nov;6(11):3464-3472.

236. Zou M, Hu C, You Q, et al. Oroxylin A induces autophagy in human malignant glioma cells via the mTOR-STAT3-Notch signaling pathway. Mol Carcinog. 2015 Nov;54(11):1363-1375.

237. Tang Z-H, Zhang L-L, Li T, et al. Glycyrrhetinic acid induces cytoprotective autophagy via the inositol-requiring enzyme 1α-c-Jun N-terminal kinase cascade in non-small cell lung cancer cells. Oncotarget. 2015;6(41):43911.

238. Way TD, Tsai SJ, Wang CM, et al. Cinnamtannin D1 from Rhododendron formosanum Induces Autophagy via the Inhibition of Akt/mTOR and Activation of ERK1/2 in Non-Small-Cell Lung Carcinoma Cells. J Agric Food Chem. 2015 Dec 9;63(48):10407-10417.

239. Hsieh SL, Chen CT, Wang JJ, et al. Sedanolide induces autophagy through the PI3K, p53 and NF-kappaB signaling pathways in human liver cancer cells. Int J Oncol. 2015 Dec;47(6):2240-2246.

240. Zhou J, Li G, Zheng Y, et al. A novel autophagy/mitophagy inhibitor liensinine sensitizes breast cancer cells to chemotherapy through DNM1L-mediated mitochondrial fission. Autophagy. 2015;11(8):1259-1279.

241. Zhao X, Fang Y, Yang Y, et al. Elaiophylin, a novel autophagy inhibitor, exerts antitumor activity as a single agent in ovarian cancer cells. Autophagy. 2015;11(10):1849-1863.

242. Wu H, Lu MH, Wang W, et al. Lamotrigine Reduces beta-Site AbetaPP-Cleaving Enzyme 1 Protein Levels Through Induction of Autophagy. J Alzheimers Dis. 2015;46(4):863-876.

243. Kim DE, Kim Y, Cho DH, et al. Raloxifene induces autophagy-dependent cell death in breast cancer cells via the activation of AMP-activated protein kinase. Mol Cells. 2015;38(2):138-144.

244. Xiao Y, Guan J. 17-AAG enhances the cytotoxicity of flavopiridol in mantle cell lymphoma via autophagy suppression. Neoplasma. 2015;62(3):391-397.

245. Wang H, Gao N, Li W, et al. Melamine induces autophagy in mesangial cells via enhancing ROS level. Toxicol Mech Methods. 2015;25(7):581-587.

246. Golden EB, Cho HY, Hofman FM, et al. Quinoline-based antimalarial drugs: a novel class of autophagy inhibitors. Neurosurg Focus. 2015 Mar;38(3):E12.

247. Kuo SY, Castoreno AB, Aldrich LN, et al. Small-molecule enhancers of autophagy modulate cellular disease phenotypes suggested by human genetics. Proc Natl Acad Sci U S A. 2015 Aug 4;112(31):E4281-4287.

248. Niso-Santano M, Malik SA, Pietrocola F, et al. Unsaturated fatty acids induce non-canonical autophagy. EMBO J. 2015 Apr 15;34(8):1025-1041.

249. Wen J, Zhao Y, Guo L. Orexin A induces autophagy in HCT-116 human colon cancer cells through the ERK signaling pathway. Int J Mol Med. 2016 Jan;37(1):126-132.

250. Yeh PS, Wang W, Chang YA, et al. Honokiol induces autophagy of neuroblastoma cells through activating the PI3K/Akt/mTOR and endoplasmic reticular stress/ERK1/2 signaling pathways and suppressing cell migration. Cancer Lett. 2016 Jan 1;370(1):66-77.

251. Lu Y, Zhang R, Liu S, et al. ZT-25, a new vacuolar H(+)-ATPase inhibitor, induces apoptosis and protective autophagy through ROS generation in HepG2 cells. Eur J Pharmacol. 2016 Jan 15;771:130-138.

252. Zhang C, Jia X, Wang K, et al. Polyphyllin VII Induces an Autophagic Cell Death by Activation of the JNK Pathway and Inhibition of PI3K/AKT/mTOR Pathway in HepG2 Cells. PLoS One. 2016;11(1):e0147405.

253. Wang WK, Lin ST, Chang WW, et al. Hinokitiol induces autophagy in murine breast and colorectal cancer cells. Environ Toxicol. 2016 Jan;31(1):77-84.

254. Wang Y, Chen B, Longtine MS, et al. Punicalagin promotes autophagy to protect primary human syncytiotrophoblasts from apoptosis. Reproduction. 2016 Feb;151(2):97-104.

255. Zhao G, Han X, Zheng S, et al. Curcumin induces autophagy, inhibits proliferation and invasion by downregulating AKT/mTOR signaling pathway in human melanoma cells. Oncol Rep. 2016 Feb;35(2):1065-1074.

256. Park D, Jeong H, Lee MN, et al. Resveratrol induces autophagy by directly inhibiting mTOR through ATP competition. Sci Rep. 2016 Feb 23;6:21772.

257. Weng Z, Gao H, Hu J, et al. Isoalantolactone induces autophagic cell death in SKOV(3) human ovarian carcinoma cells via upregulation of PEA-15. Oncol Rep. 2016 Feb;35(2):833-840.

258. Yu L, Wu WK, Gu C, et al. Obatoclax impairs lysosomal function to block autophagy in cisplatin-sensitive and -resistant esophageal cancer cells. Oncotarget. 2016 Mar 22;7(12):14693-14707.

259. Vegliante R, Desideri E, Di Leo L, et al. Dehydroepiandrosterone triggers autophagic cell death in human hepatoma cell line HepG2 via JNK-mediated p62/SQSTM1 expression. Carcinogenesis. 2016 Mar;37(3):233-244.

260. Sano O, Kazetani K, Funata M, et al. Vacuolin-1 inhibits autophagy by impairing lysosomal maturation via PIKfyve inhibition. FEBS Lett. 2016 Jun;590(11):1576-1585.

261. Yang C, Wu C, Xu D, et al. AstragalosideII inhibits autophagic flux and enhance chemosensitivity of cisplatin in human cancer cells. Biomed Pharmacother. 2016 Jul;81:166-175.

262. Lu Y, Liu LL, Liu SS, et al. Celecoxib suppresses autophagy and enhances cytotoxicity of imatinib in imatinib-resistant chronic myeloid leukemia cells. J Transl Med. 2016 Sep 20;14:270.

263. Xia Q, Zheng Y, Jiang W, et al. Valproic acid induces autophagy by suppressing the Akt/mTOR pathway in human prostate cancer cells. Oncol Lett. 2016 Sep;12(3):1826-1832.

264. Cho YS, Yen CN, Shim JS, et al. Antidepressant indatraline induces autophagy and inhibits restenosis via suppression of mTOR/S6 kinase signaling pathway. Sci Rep. 2016 Oct 3;6:34655.

265. Huo R, Wang L, Liu P, et al. Cabazitaxel-induced autophagy via the PI3K/Akt/mTOR pathway contributes to A549 cell death. Mol Med Rep. 2016 Oct;14(4):3013-3020.

266. Feng S, Jin Y, Cui M, et al. Lysine-Specific Demethylase 1 (LSD1) Inhibitor S2101 Induces Autophagy via the AKT/mTOR Pathway in SKOV3 Ovarian Cancer Cells. Med Sci Monit. 2016 Dec 3;22:4742-4748.

267. Nie H, Wang Y, Qin Y, et al. Oleanolic acid induces autophagic death in human gastric cancer cells in vitro and in vivo. Cell Biol Int. 2016 Jul;40(7):770-778.

268. Papp D, Kovacs T, Billes V, et al. AUTEN-67, an autophagy-enhancing drug candidate with potent antiaging and neuroprotective effects. Autophagy. 2016;12(2):273-286.

269. Belzile JP, Sabalza M, Craig M, et al. Trehalose, an mTOR-Independent Inducer of Autophagy, Inhibits Human Cytomegalovirus Infection in Multiple Cell Types. J Virol. 2016 Feb 1;90(3):1259-1277.

270. Guha P, Harraz MM, Snyder SH. Cocaine elicits autophagic cytotoxicity via a nitric oxide-GAPDH signaling cascade. Proc Natl Acad Sci U S A. 2016 Feb 2;113(5):1417-1422. (Erratum in Proc Natl Acad Sci U S A. 2017 Mar 1417;1114(1410):E2066-E2067).

271. Huang Y, Zhou J, Luo S, et al. Identification of a fluorescent small-molecule enhancer for therapeutic autophagy in colorectal cancer by targeting mitochondrial protein translocase TIM44. Gut. 2018 Feb;67(2):307-319.

272. Kuramoto K, Wang N, Fan Y, et al. Autophagy activation by novel inducers prevents BECN2-mediated drug tolerance to cannabinoids. Autophagy. 2016 Sep;12(9):1460-1471.

273. Lagaye S, Brun S, Gaston J, et al. Anti-hepatitis C virus potency of a new autophagy inhibitor using human liver slices model. World J Hepatol. 2016 Jul 28;8(21):902-914.

274. Luo Y, Yang X, Shi Q. The cytochrome P450 inhibitor SKF-525A disrupts autophagy in primary rat hepatocytes. Chem Biol Interact. 2016 Aug 5;255:55-62.

275. Wei RJ, Lin SS, Wu WR, et al. A microtubule inhibitor, ABT-751, induces autophagy and delays apoptosis in Huh-7 cells. Toxicol Appl Pharmacol. 2016 Nov 15;311:88-98.

276. Jing Z, Fei W, Zhou J, et al. Salvianolic acid B, a novel autophagy inducer, exerts antitumor activity as a single agent in colorectal cancer cells. Oncotarget. 2016 Sep 20;7(38):61509-61519.

277. DeBosch BJ, Heitmeier MR, Mayer AL, et al. Trehalose inhibits solute carrier 2A (SLC2A) proteins to induce autophagy and prevent hepatic steatosis. Sci Signal. 2016 Feb 23;9(416):ra21.

278. Zheng X, Chen W, Hou H, et al. Ginsenoside 20(S)-Rg3 induced autophagy to inhibit migration and invasion of ovarian cancer. Biomed Pharmacother. 2017 Jan;85:620-626.

279. Zheng XT, Wu ZH, Wei Y, et al. Induction of autophagy by salidroside through the AMPK-mTOR pathway protects vascular endothelial cells from oxidative stress-induced apoptosis. Mol Cell Biochem. 2017 Jan;425(1-2):125-138.

280. Yuan H, Tan B, Gao SJ. Tenovin-6 impairs autophagy by inhibiting autophagic flux. Cell Death Dis. 2017 Feb 9;8(2):e2608.

281. Morita M, Nishinaka Y, Kato I, et al. Dasatinib induces autophagy in mice with Bcr-Abl-positive leukemia. Int J Hematol. 2017 Mar;105(3):335-340.

282. Hu G, Gong X, Wang L, et al. Triptolide Promotes the Clearance of alpha-Synuclein by Enhancing Autophagy in Neuronal Cells. Mol Neurobiol. 2017 Apr;54(3):2361-2372.

283. Zhang QC, Pan ZH, Liu BN, et al. Benzyl isothiocyanate induces protective autophagy in human lung cancer cells through an endoplasmic reticulum stress-mediated mechanism. Acta Pharmacol Sin. 2017 Apr;38(4):539-550.

284. Huang YH, Sun Y, Huang FY, et al. Toxicarioside O induces protective autophagy in a sirtuin-1-dependent manner in colorectal cancer cells. Oncotarget. 2017 Aug 8;8(32):52783-52791.

285. Kovacs T, Billes V, Komlos M, et al. The small molecule AUTEN-99 (autophagy enhancer-99) prevents the progression of neurodegenerative symptoms. Sci Rep. 2017 Feb 16;7(1):42014.

286. Kania E, Pajak B, O'Prey J, et al. Verapamil treatment induces cytoprotective autophagy by modulating cellular metabolism. FEBS J. 2017 May;284(9):1370-1387.

287. Chen C, Lu Y, Siu HM, et al. Identification of Novel Vacuolin-1 Analogues as Autophagy Inhibitors by Virtual Drug Screening and Chemical Synthesis. Molecules. 2017 May 27;22(6).

288. Woo Y, Jung YJ. Angiotensin II receptor blockers induce autophagy in prostate cancer cells. Oncol Lett. 2017 May;13(5):3579-3585.

289. Wang Y, Zhang J, Huang ZH, et al. Isodeoxyelephantopin induces protective autophagy in lung cancer cells via Nrf2-p62-keap1 feedback loop. Cell Death Dis. 2017 Jun 15;8(6):e2876.

290. Yuan H, He M, Cheng F, et al. Tenovin-6 inhibits proliferation and survival of diffuse large B-cell lymphoma cells by blocking autophagy. Oncotarget. 2017 Feb 28;8(9):14912-14924.

291. Robke L, Laraia L, Carnero Corrales MA, et al. Phenotypic Identification of a Novel Autophagy Inhibitor Chemotype Targeting Lipid Kinase VPS34. Angew Chem Int Ed Engl. 2017 Jul 3;56(28):8153-8157.

292. Chen LM, Song TJ, Xiao JH, et al. Tripchlorolide induces autophagy in lung cancer cells by inhibiting the PI3K/AKT/mTOR pathway and improves cisplatin sensitivity in A549/DDP cells. Oncotarget. 2017 Sep 8;8(38):63911-63922.

293. Zhang P, Zheng Z, Ling L, et al. w09, a novel autophagy enhancer, induces autophagy-dependent cell apoptosis via activation of the EGFR-mediated RAS-RAF1-MAP2K-MAPK1/3 pathway. Autophagy. 2017 Jul 3;13(7):1093-1112.

294. Wang S, Li J, Du Y, et al. The Class I PI3K inhibitor S14161 induces autophagy in malignant blood cells by modulating the Beclin 1/Vps34 complex. J Pharmacol Sci. 2017 Aug;134(4):197-202.

295. Wang G, Zhou P, Chen X, et al. The novel autophagy inhibitor elaiophylin exerts antitumor activity against multiple myeloma with mutant TP53 in part through endoplasmic reticulum stress-induced apoptosis. Cancer Biol Ther. 2017 Aug 3;18(8):584-595.

296. Hamada M, Kameyama H, Iwai S, et al. Induction of autophagy by sphingosine kinase 1 inhibitor PF-543 in head and neck squamous cell carcinoma cells. Cell Death Discov. 2017;3:17047.

297. Chen HY, Huang TC, Shieh TM, et al. Isoliquiritigenin Induces Autophagy and Inhibits Ovarian Cancer Cell Growth. Int J Mol Sci. 2017 Sep 21;18(10).

298. Wu MY, Wang SF, Cai CZ, et al. Natural autophagy blockers, dauricine (DAC) and daurisoline (DAS), sensitize cancer cells to camptothecin-induced toxicity. Oncotarget. 2017 Sep 29;8(44):77673-77684.

299. Jia HY, Wang HN, Xia FY, et al. Dichloroacetate induces protective autophagy in esophageal squamous carcinoma cells. Oncol Lett. 2017 Sep;14(3):2765-2770.

300. Guan H, Piao H, Qian Z, et al. 2,5-Hexanedione induces autophagic death of VSC4.1 cells via a PI3K/Akt/mTOR pathway. Mol Biosyst. 2017 Sep 26;13(10):1993-2005.

301. Zhang X, Xu R, Zhang C, et al. Trifluoperazine, a novel autophagy inhibitor, increases radiosensitivity in glioblastoma by impairing homologous recombination. J Exp Clin Cancer Res. 2017 Sep 5;36(1):118.

302. Aizawa S, Hoki M, Yamamuro Y. Lactoferrin promotes autophagy via AMP-activated protein kinase activation through low-density lipoprotein receptor-related protein 1. Biochem Biophys Res Commun. 2017 Nov 4;493(1):509-513.

303. Fan L, Chen D, Wang J, et al. Sevoflurane Ameliorates Myocardial Cell Injury by Inducing Autophagy via the Deacetylation of LC3 by SIRT1. Anal Cell Pathol (Amst). 2017;2017:6281285.

304. Wang YF, Xu YL, Tang ZH, et al. Baicalein Induces Beclin 1- and Extracellular Signal-Regulated Kinase-Dependent Autophagy in Ovarian Cancer Cells. Am J Chin Med. 2017;45(1):123-136.

305. Carew JS, Espitia CM, Zhao W, et al. Disruption of Autophagic Degradation with ROC-325 Antagonizes Renal Cell Carcinoma Pathogenesis. Clin Cancer Res. 2017 Jun 1;23(11):2869-2879.

306. Feng ZL, Zhang LL, Zheng YD, et al. Norditerpenoids and Dinorditerpenoids from the Seeds of Podocarpus nagi as Cytotoxic Agents and Autophagy Inducers. J Nat Prod. 2017 Jul 28;80(7):2110-2117.

307. Laraia L, Ohsawa K, Konstantinidis G, et al. Discovery of Novel Cinchona-Alkaloid-Inspired Oxazatwistane Autophagy Inhibitors. Angew Chem Int Ed Engl. 2017 Feb 13;56(8):2145-2150.

308. Li J, Zhang L, Xia Q, et al. Hedgehog signaling inhibitor GANT61 induces endoplasmic reticulum stress-mediated protective autophagy in hepatic stellate cells. Biochem Biophys Res Commun. 2017 Nov 4;493(1):487-493.

309. Li LS, Lu YL, Nie J, et al. Dendrobium nobile Lindl alkaloid, a novel autophagy inducer, protects against axonal degeneration induced by Abeta25-35 in hippocampus neurons in vitro. CNS Neurosci Ther. 2017 Apr;23(4):329-340.

310. Liu H, Hu C, Sun N, et al. A triterpenoidal saponin fraction of Conyza blinii H.Lév. is a dual-targeting autophagy inhibitor for HeLa cells. RSC Advances. 2017;7(39):24291-24297.

311. Mishra P, Dauphinee AN, Ward C, et al. Discovery of pan autophagy inhibitors through a high-throughput screen highlights macroautophagy as an evolutionarily conserved process across 3 eukaryotic kingdoms. Autophagy. 2017 Sep 2;13(9):1556-1572.

312. Ouyang L, Zhang L, Liu J, et al. Discovery of a Small-Molecule Bromodomain-Containing Protein 4 (BRD4) Inhibitor That Induces AMP-Activated Protein Kinase-Modulated Autophagy-Associated Cell Death in Breast Cancer. J Med Chem. 2017 Dec 28;60(24):9990-10012.

313. Pampaloni F, Mayer B, Kabat Vel-Job K, et al. A Novel Cellular Spheroid-Based Autophagy Screen Applying Live Fluorescence Microscopy Identifies Nonactin as a Strong Inducer of Autophagosomal Turnover. SLAS Discov. 2017 Jun;22(5):558-570.

314. Song L, Wang Z, Wang Y, et al. Natural Cyclopeptide RA-XII, a New Autophagy Inhibitor, Suppresses Protective Autophagy for Enhancing Apoptosis through AMPK/mTOR/P70S6K Pathways in HepG2 Cells. Molecules. 2017 Nov 11;22(11).

315. Xu H, Laraia L, Schneider L, et al. Highly Enantioselective Catalytic Vinylogous Propargylation of Coumarins Yields a Class of Autophagy Inhibitors. Angew Chem Int Ed Engl. 2017 Sep 4;56(37):11232-11236.

316. Yao X, Li X, Zhang D, et al. B-cell lymphoma 2 inhibitor ABT-737 induces Beclin1- and reactive oxygen species-dependent autophagy in Adriamycin-resistant human hepatocellular carcinoma cells. Tumour Biol. 2017 Mar;39(3):1010428317695965.

317. Zhang E, Wang S, Li LL, et al. Discovery of novel jaspine B analogues as autophagy inducer. Bioorg Med Chem Lett. 2018 Feb 1;28(3):497-502.

318. Zhou X, Yue GG, Chan AM, et al. Eriocalyxin B, a novel autophagy inducer, exerts anti-tumor activity through the suppression of Akt/mTOR/p70S6K signaling pathway in breast cancer. Biochem Pharmacol. 2017 Oct 15;142:58-70.

319. Tang ZH, Cao WX, Guo X, et al. Identification of a novel autophagic inhibitor cepharanthine to enhance the anti-cancer property of dacomitinib in non-small cell lung cancer. Cancer Lett. 2018 Jan 1;412:1-9.

320. Kurdi A, Cleenewerck M, Vangestel C, et al. ATG4B inhibitors with a benzotropolone core structure block autophagy and augment efficiency of chemotherapy in mice. Biochem Pharmacol. 2017 Aug 15;138:150-162.

321. Liu PF, Tsai KL, Hsu CJ, et al. Drug Repurposing Screening Identifies Tioconazole as an ATG4 Inhibitor that Suppresses Autophagy and Sensitizes Cancer Cells to Chemotherapy. Theranostics. 2018;8(3):830-845.

322. Diaz M, Gonzalez R, Plano D, et al. A diphenyldiselenide derivative induces autophagy via JNK in HTB-54 lung cancer cells. J Cell Mol Med. 2018 Jan;22(1):289-301.

323. Xu T, Singh D, Liu J, et al. Neferine, is not inducer but blocker for macroautophagic flux targeting on lysosome malfunction. Biochem Biophys Res Commun. 2018 Jan 1;495(1):1516-1521.

324. Fu R, Deng Q, Zhang H, et al. A novel autophagy inhibitor berbamine blocks SNARE-mediated autophagosome-lysosome fusion through upregulation of BNIP3. Cell Death Dis. 2018 Feb 14;9(2):243.

325. Robke L, Futamura Y, Konstantinidis G, et al. Discovery of the novel autophagy inhibitor aumitin that targets mitochondrial complex I. Chem Sci. 2018 Mar 21;9(11):3014-3022.

326. He X, Yuan W, Li Z, et al. 6-Hydroxydopamine induces autophagic flux dysfunction by impairing transcription factor EB activation and lysosomal function in dopaminergic neurons and SH-SY5Y cells. Toxicol Lett. 2018 Feb;283:58-68.

327. Kim YH, Kwak MS, Shin JM, et al. Inflachromene inhibits autophagy through modulation of Beclin 1 activity. J Cell Sci. 2018 Feb 20;131(4).

328. Sun Y, Huang YH, Huang FY, et al. 3'-epi-12beta-hydroxyfroside, a new cardenolide, induces cytoprotective autophagy via blocking the Hsp90/Akt/mTOR axis in lung cancer cells. Theranostics. 2018;8(7):2044-2060.

329. Kim SH, Park S, Yu HS, et al. The antipsychotic agent clozapine induces autophagy via the AMPK-ULK1-Beclin1 signaling pathway in the rat frontal cortex. Prog Neuropsychopharmacol Biol Psychiatry. 2018 Feb 2;81:96-104.

330. Lai SL, Mustafa MR, Wong PF. Panduratin A induces protective autophagy in melanoma via the AMPK and mTOR pathway. Phytomedicine. 2018 Mar 15;42:144-151.

331. Zhang Z, Liu Z, Chen J, et al. Resveratrol induces autophagic apoptosis via the lysosomal cathepsin D pathway in human drug-resistant K562/ADM leukemia cells. Exp Ther Med. 2018 Mar;15(3):3012-3019.

332. Cao Z, Huang S, Dou C, et al. Cyanidin suppresses autophagic activity regulating chondrocyte hypertrophic differentiation. J Cell Physiol. 2018 Mar;233(3):2332-2342.

333. Lim H, Lim YM, Kim KH, et al. A novel autophagy enhancer as a therapeutic agent against metabolic syndrome and diabetes. Nat Commun. 2018 Apr 12;9(1):1438.

334. Shaikh S, Troncoso R, Mondaca-Ruff D, et al. The STIM1 inhibitor ML9 disrupts basal autophagy in cardiomyocytes by decreasing lysosome content. Toxicol In Vitro. 2018 Apr;48:121-127.

335. Chu J, Fu Y, Xu J, et al. ATG4B inhibitor FMK-9a induces autophagy independent on its enzyme inhibition. Arch Biochem Biophys. 2018 Apr 15;644:29-36.

336. Chi J, Wang L, Zhang X, et al. Cyclosporin A induces autophagy in cardiac fibroblasts through the NRP-2/WDFY-1 axis. Biochimie. 2018 May;148:55-62.

337. Niu Q, Zhao W, Wang J, et al. LicA induces autophagy through ULK1/Atg13 and ROS pathway in human hepatocellular carcinoma cells. Int J Mol Med. 2018 May;41(5):2601-2608.

338. Yang G, Bai Y, Wu X, et al. Patulin induced ROS-dependent autophagic cell death in Human Hepatoma G2 cells. Chem Biol Interact. 2018 May 25;288:24-31.

339. Zhao X, Luo G, Cheng Y, et al. Compound C induces protective autophagy in human cholangiocarcinoma cells via Akt/mTOR-independent pathway. J Cell Biochem. 2018 Jul;119(7):5538-5550.

340. Tian Y, Xu H, Farooq AA, et al. Maslinic acid induces autophagy by down-regulating HSPA8 in pancreatic cancer cells. Phytother Res. 2018 Jul;32(7):1320-1331.

341. Yang F, Wang F, Liu Y, et al. Sulforaphane induces autophagy by inhibition of HDAC6-mediated PTEN activation in triple negative breast cancer cells. Life Sci. 2018 Nov 15;213:149-157.

342. Wang J, Li J, Cao N, et al. Resveratrol, an activator of SIRT1, induces protective autophagy in non-small-cell lung cancer via inhibiting Akt/mTOR and activating p38-MAPK. Onco Targets Ther. 2018;11:7777-7786.

343. Zhan Y, Wang K, Li Q, et al. The Novel Autophagy Inhibitor Alpha-Hederin Promoted Paclitaxel Cytotoxicity by Increasing Reactive Oxygen Species Accumulation in Non-Small Cell Lung Cancer Cells. Int J Mol Sci. 2018 Oct 18;19(10).

344. Koukourakis MI, Giatromanolaki A, Fylaktakidou K, et al. SMER28 is a mTOR-independent small molecule enhancer of autophagy that protects mouse bone marrow and liver against radiotherapy. Invest New Drugs. 2018 Oct;36(5):773-781.

345. Martin KR, Celano SL, Solitro AR, et al. A Potent and Selective ULK1 Inhibitor Suppresses Autophagy and Sensitizes Cancer Cells to Nutrient Stress. iScience. 2018 Oct 26;8:74-84.

346. Feng X, Zhou J, Li J, et al. Tubeimoside I induces accumulation of impaired autophagolysosome against cervical cancer cells by both initiating autophagy and inhibiting lysosomal function. Cell Death Dis. 2018 Nov 2;9(11):1117.

347. Sun M, Wang S, Jiang L, et al. Patulin Induces Autophagy-Dependent Apoptosis through Lysosomal-Mitochondrial Axis and Impaired Mitophagy in HepG2 Cells. J Agric Food Chem. 2018 Nov 21;66(46):12376-12384.

348. Cheng B, Lu J, Li T, et al. 1,3-Dichloro-2-Propanol inhibits autophagy via P53/AMPK/mTOR pathway in HepG2 cells. Food Chem Toxicol. 2018 Dec;122:143-150.

349. Shi W, Xu D, Gu J, et al. Saikosaponin-d inhibits proliferation by up-regulating autophagy via the CaMKKbeta-AMPK-mTOR pathway in ADPKD cells. Mol Cell Biochem. 2018 Dec;449(1-2):219-226.

350. Wang J, Qi Q, Zhou W, et al. Inhibition of glioma growth by flavokawain B is mediated through endoplasmic reticulum stress induced autophagy. Autophagy. 2018;14(11):2007-2022.

351. Dai CH, Shu Y, Chen P, et al. YM155 sensitizes non-small cell lung cancer cells to EGFR-tyrosine kinase inhibitors through the mechanism of autophagy induction. Biochim Biophys Acta Mol Basis Dis. 2018 Dec;1864(12):3786-3798.

352. Guo Q, Yu C, Zhang C, et al. Highly Selective, Potent, and Oral mTOR Inhibitor for Treatment of Cancer as Autophagy Inducer. J Med Chem. 2018 Feb 8;61(3):881-904.

353. Kaliszczak M, van Hechanova E, Li Y, et al. The HDAC6 inhibitor C1A modulates autophagy substrates in diverse cancer cells and induces cell death. Br J Cancer. 2018 Nov;119(10):1278-1287.

354. Lv Y, Li B, Han K, et al. The Nedd8-activating enzyme inhibitor MLN4924 suppresses colon cancer cell growth via triggering autophagy. Korean J Physiol Pharmacol. 2018 Nov;22(6):617-625.

355. Zhang L, Qiang P, Yu J, et al. Identification of compound CA-5f as a novel late-stage autophagy inhibitor with potent anti-tumor effect against non-small cell lung cancer. Autophagy. 2019 Mar;15(3):391-406.

356. Wong WT, Li LH, Rao YK, et al. Repositioning of the beta-Blocker Carvedilol as a Novel Autophagy Inducer That Inhibits the NLRP3 Inflammasome. Front Immunol. 2018;9:1920.

357. Zhang Z, Zhang M, Liu H, et al. AZD9291 promotes autophagy and inhibits PI3K/Akt pathway in NSCLC cancer cells. J Cell Biochem. 2019 Jan;120(1):756-767.

358. Marcelo A, Brito F, Carmo-Silva S, et al. Cordycepin activates autophagy through AMPK phosphorylation to reduce abnormalities in Machado-Joseph disease models. Hum Mol Genet. 2019 Jan 1;28(1):51-63.

359. Chen Z, Li C, Qian YH, et al. Enhancement of autophagy flux by isopsoralen ameliorates interleukin-1beta-stimulated apoptosis in rat chondrocytes. J Asian Nat Prod Res. 2019 Jan 8:1-14.

360. Ma YY, Jin ZX, Yu K, et al. NVP-BEZ235-induced autophagy as a potential therapeutic approach for multiple myeloma. Am J Transl Res. 2019;11(1):87-105.

361. Qi HY, Qu XJ, Liu J, et al. Bufalin induces protective autophagy by Cbl-b regulating mTOR and ERK signaling pathways in gastric cancer cells. Cell Biol Int. 2019 Jan;43(1):33-43.

362. Guntuku L, Gangasani JK, Thummuri D, et al. IITZ-01, a novel potent lysosomotropic autophagy inhibitor, has single-agent antitumor efficacy in triple-negative breast cancer in vitro and in vivo. Oncogene. 2019 Jan;38(4):581-595.

363. Li K, Chen HS, Li D, et al. SAR405, a Highly Specific VPS34 Inhibitor, Disrupts Auditory Fear Memory Consolidation of Mice via Facilitation of Inhibitory Neurotransmission in Basolateral Amygdala. Biol Psychiatry. 2019 Feb 1;85(3):214-225.

364. Fu Y, Hong L, Xu J, et al. Discovery of a small molecule targeting autophagy via ATG4B inhibition and cell death of colorectal cancer cells in vitro and in vivo. Autophagy. 2019 Feb;15(2):295-311.

365. Cui LH, Li CX, Zhuo YZ, et al. Saikosaponin d ameliorates pancreatic fibrosis by inhibiting autophagy of pancreatic stellate cells via PI3K/Akt/mTOR pathway. Chem Biol Interact. 2019 Feb 25;300:18-26.

366. Luo S, Li Z, Mao L, et al. Sodium butyrate induces autophagy in colorectal cancer cells through LKB1/AMPK signaling. J Physiol Biochem. 2019 Feb;75(1):53-63.

367. Ortiz-Rodriguez A, Acaz-Fonseca E, Boya P, et al. Lipotoxic Effects of Palmitic Acid on Astrocytes Are Associated with Autophagy Impairment. Mol Neurobiol. 2019 Mar;56(3):1665-1680.

368. Izdebska M, Halas-Wisniewska M, Zielinska W, et al. Lidocaine induces protective autophagy in rat C6 glioma cell line. Int J Oncol. 2019 Mar;54(3):1099-1111.

369. Jiang J, Zhang L, Chen H, et al. Regorafenib induces lethal autophagy arrest by stabilizing PSAT1 in glioblastoma. Autophagy. 2019 Mar 25:1-17.

370. Hou JZ, Xi ZQ, Niu J, et al. Inhibition of PIKfyve using YM201636 suppresses the growth of liver cancer via the induction of autophagy. Oncol Rep. 2019 Mar;41(3):1971-1979.

371. Siddiqi FH, Menzies FM, Lopez A, et al. Felodipine induces autophagy in mouse brains with pharmacokinetics amenable to repurposing. Nat Commun. 2019 Apr 18;10(1):1817.

372. Yang X, Xie J, Liu X, et al. Autophagy induction by xanthoangelol exhibits anti-metastatic activities in hepatocellular carcinoma. Cell Biochem Funct. 2019 Apr;37(3):128-138.

373. Guo D, Shen Y, Li W, et al. 6-Bromoindirubin-3'-Oxime (6BIO) Suppresses the mTOR Pathway, Promotes Autophagy, and Exerts Anti-aging Effects in Rodent Liver. Front Pharmacol. 2019;10:320.

374. Bouhamdani N, Comeau D, Cormier K, et al. STF-62247 accumulates in lysosomes and blocks late stages of autophagy to selectively target von Hippel-Lindau-inactivated cells. Am J Physiol Cell Physiol. 2019 May 1;316(5):C605-C620.

375. Liang QP, Xu TQ, Liu BL, et al. Sasanquasaponin IotaIotaIota from Schima crenata Korth induces autophagy through Akt/mTOR/p70S6K pathway and promotes apoptosis in human melanoma A375 cells. Phytomedicine. 2019 May;58:152769.

376. Matteoni S, Abbruzzese C, Matarrese P, et al. The kinase inhibitor SI113 induces autophagy and synergizes with quinacrine in hindering the growth of human glioblastoma multiforme cells. J Exp Clin Cancer Res. 2019 May 17;38(1):202.

377. Ning J, Zhao C, Chen JX, et al. Oleate inhibits hepatic autophagy through p38 mitogen-activated protein kinase (MAPK). Biochem Biophys Res Commun. 2019 Jun 18;514(1):92-97.

378. Palumbo P, Lombardi F, Augello FR, et al. NOS2 inhibitor 1400W Induces Autophagic Flux and Influences Extracellular Vesicle Profile in Human Glioblastoma U87MG Cell Line. Int J Mol Sci. 2019 Jun 20;20(12).

379. Paha J, Kanjanasirirat P, Munyoo B, et al. A novel potent autophagy inhibitor ECDD-S27 targets vacuolar ATPase and inhibits cancer cell survival. Sci Rep. 2019 Jun 24;9(1):9177.

380. Ding R, Wang X, Chen W, et al. WX20120108, a novel IAP antagonist, induces tumor cell autophagy via activating ROS-FOXO pathway. Acta Pharmacol Sin. 2019 Jul 17.

381. Liu Y, Ren Z, Li X, et al. Pristimerin Induces Autophagy-Mediated Cell Death in K562 Cells through the ROS/JNK Signaling Pathway. Chem Biodivers. 2019 Aug;16(8):e1900325.

382. Chang CH, Bijian K, Wernic D, et al. A novel orally available seleno-purine molecule suppresses triple-negative breast cancer cell proliferation and progression to metastasis by inducing cytostatic autophagy. Autophagy. 2019 Aug;15(8):1376-1390.

383. Thome MP, Pereira LC, Onzi GR, et al. Dipyridamole impairs autophagic flux and exerts antiproliferative activity on prostate cancer cells. Exp Cell Res. 2019 Sep 1;382(1):111456.

384. Laraia L, Friese A, Corkery DP, et al. The cholesterol transfer protein GRAMD1A regulates autophagosome biogenesis. Nature Chemical Biology. 2019:1.

385. Kaiser N, Corkery D, Wu Y, et al. Modulation of autophagy by the novel mitochondrial complex I inhibitor Authipyrin. Bioorganic medicinal chemistry. 2019;27(12):2444-2448.