

## Supplemental Table and References

### Cytoplasmic RNA granules in somatic maintenance

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RNA granule	Established or predicted function	Model systems	References
Processing bodies (PBs)	mRNA sequestration, repression of translation, coordinated mRNA release for localized translation, neuronal survival, response to DNA replication stress	Mammals, <i>C. elegans</i> , <i>S. cerevisiae</i> , <i>Nicotiana tabacum</i> , Arabidopsis thaliana	[19,20,32-34,65-68]
Translationally active mRNA granules	granules may translate specific mRNAs, recruit PB components upon glucose starvation	<i>S. cerevisiae</i>	[45]
Neuronal granules	mRNA sequestration, mRNA trafficking, repression of translation, coordinated mRNA release for localized translation, neuronal survival, neuronal development, synapse formation, control of synaptic strength, neuronal plasticity (long-term depression, long-term potentiation), learning, memory	Mammals, <i>D. melanogaster</i>	[18,36-39,69-74]
IMP1 (ZBP1) granules	contain IMP1, mRNA, 40S ribosomal subunits, shuttling hnRNPs, polyA-binding proteins, likely related to neuronal granules, control the synthesis of Tau by stabilizing <i>tau</i> mRNAs encoding specific Tau isoforms	HEK 293 (derived from embryonic kidney cells), PC12 (rat pheochromocytoma)	[42,43]
Granules formed by mutant FUS or TDP-43 proteins	involved in neurodegeneration through permanent granule aggregation, changes in granule transport and other mechanisms	Mammals, <i>C. elegans</i> , <i>Drosophila</i> zebrafish	[72,75-82]
megaRNPs	generated by nuclear envelope budding, present in neurons and other cell types	Mammals, <i>D. melanogaster</i> , <i>S. cerevisiae</i>	[40]
U bodies	assembly and/or storage of U snRNPs in cytoplasm, <i>Salmonella</i> , <i>Shigella</i> or <i>Listeria</i> infection impair U snRNP assembly and U body formation	<i>D. melanogaster</i> , <i>D. virilis</i> , <i>Xenopus laevis</i> , HeLa cells	[44,83,84]
EGP-bodies	mRNA storage, may control protein kinase A related signaling	<i>S. cerevisiae</i>	[21,85]
Cadherin associated granules	spherical compartments containing active RISC components, mRNAs	MDCK (kidney epithelium), HEK 293FT, Caco2 (colorectal adenocarcinoma)	[46]
Hybrid bodies	transiently produced upon hypo-osmotic stress, contain both PB and SG markers	<i>S. cerevisiae</i>	[86]

Mitochondrial RNA granules (MRGs)	ribosome biogenesis, modification of mt-RNA	mammalian cells, 143B (human osteosarcoma), HeLa cells	[48,87]
RNA granules in multivesicular bodies or exosomes	could play a role for the export of specific RNAs via multivesicular bodies, under normal conditions during starvation and other conditions	several cultured mammalian cell lines, including primary cortical neurons	[88,89]
Stress granules (SGs)	sequester mRNA and non-coding RNA upon stress, composition determined by stress and cell type, disassemble when stress subsides, zinc ions can promote TIA-1 multimerization, impaired granulostasis interferes with disassembly	Mammals, <i>C. elegans</i> , <i>S. cerevisiae</i> , <i>D. melanogaster</i> , <i>C. reinhardtii</i> , <i>A. thaliana</i>	[24,52,90-94]
SGs induced by tRNA cleavage	form upon tRNA cleavage, dependent on eIF2α phosphorylation, starvation can trigger tRNA cleavage, SG formation by 5'-tRNA fragments relies on YB-1, tRNA fragments may form G-quadruplets	<i>Tetrahymena thermophila</i> , <i>T. cruzi</i> , mammals	[95-103]
Plant heat stress granules	storage sites for non-translated mRNAs, distinct from SGs	<i>A. thaliana</i>	[104,105]
Chloroplast stress granules (cpSGs)	protection against oxidative stress	<i>Chlamydomonas reinhardtii</i>	[55,90]
Oxidized RNA granules	RNA quality control	<i>C. reinhardtii</i> , HeLa cells	[55]
RNA granules produced by human parasites	transient transcript protection, adaptation to new host environment, improved survival of parasite	<i>Plasmodium</i> strains, <i>Toxoplasma gondii</i> , <i>T. brucei</i> , <i>T. cruzi</i> , <i>Leishmania</i>	[58,106]
RNA granules in virus-infected animal and plant cells	virus infection can trigger SG assembly and thereby protect the host cells or organism, some viruses interfere with SG formation	different animal and plant species, studies in cultured cells or whole organisms	[3,107-111]
RNA granules and cancer	chemotherapeutic drugs may instigate SG assembly and thereby enhance cancer cell survival	several cellular and organismal model systems	[3,59,60,112]
ALK granules	form in anaplastic large cell lymphoma in the absence of stress, contain ALK kinase, polyA-RNA, the SG marker protein HuR, as well as other SG and PB components, move on microtubules	anaplastic large cell lymphoma	[60,113]
SMIGs	formed by overexpression of MLN 51, MLN51 overexpressed in some breast cancer cells, SMIGs promote PB disassembly, may interfere with maturation of some miRNAs	HeLa, HER <sup>2+</sup> breast cancer, normal breast cells	[114]

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