

Supplementary Table S1.

The twenty GO categories with the strongest deviations from the stop codon frequencies expected on the basis of Poisson binomial cumulative distribution. The probability p of codon occurrence in each gene was set equal to the codon fraction expected at GC-content of the CDS. For binomial distribution the probability $p(\text{UAA})$ was estimated from the relative codon fraction in genome ($p(\text{UAA}) = 0.2814$).

ID	Name	Ontology	Definition	UAA frequency	UAG frequency	UGA frequency	Number of stop codons	Poisson binomial model $P(X \geq n, \text{UAA})$	Binomial model $P(X \geq n, \text{UAA})$	UAA fraction	UAA fraction without ribosomal proteins
GO:0005198	structural molecule activity	Molecular Function	The action of a molecule that contributes to the structural integrity of a complex or assembly within or outside a cell.	225	114	216	555	5.11E-15	2.35E-10	0.41	0.37
GO:0045047	protein targeting to ER	Biological Process	The process of directing proteins towards the endoplasmic reticulum (ER) using signals contained within the protein. One common mechanism uses a 16- to 30-residue signal sequence, typically located at the N-terminus of the protein and containing positively charged amino acids followed by a continuous stretch of hydrophobic residues, which directs the ribosome to the ER membrane and initiates transport of the growing polypeptide across the ER membrane.	62	16	25	103	2.20E-10	1.18E-11	0.60	0.46
GO:0022626	cytosolic ribosome	Cellular Component	A ribosome located in the cytosol.	56	14	22	92	2.21E-10	6.16E-11	0.61	-
GO:0072599	establishment of protein localization to endoplasmic reticulum	Biological Process	The directed movement of a protein to a specific location in the endoplasmic reticulum.	63	16	28	107	9.93E-10	3.12E-11	0.59	0.43
GO:0022411	cellular component disassembly	Biological Process	A cellular process that results in the breakdown of a cellular component.	186	77	186	449	1.48E-09	1.08E-09	0.41	0.37
GO:0006614	SRP-dependent cotranslational protein targeting to membrane	Biological Process	The targeting of proteins to a membrane that occurs during translation and is dependent upon two key components, the signal-recognition particle (SRP) and the SRP receptor. SRP is a cytosolic particle that transiently binds to the endoplasmic reticulum (ER) signal sequence in a nascent protein, to the large ribosomal unit, and to the SRP receptor in the ER membrane.	59	16	25	100	1.52E-09	1.16E-10	0.59	0.39
GO:0006613	cotranslational protein targeting to membrane	Biological Process	The targeting of proteins to a membrane that occurs during translation. The transport of most secretory proteins, particularly those with more than 100 amino acids, into the endoplasmic reticulum lumen occurs in this manner, as does the import of some proteins into mitochondria.	60	16	26	102	1.77E-09	9.58E-11	0.59	0.40
GO:0019083	viral transcription	Biological Process	The process by which a viral genome, or part of a viral genome, is transcribed within the host cell.	61	16	27	104	2.02E-09	7.93E-11	0.59	0.41
GO:0070972	protein localization to endoplasmic reticulum	Biological Process	A process in which a protein is transported to, or maintained in, a location within the endoplasmic reticulum.	69	20	36	125	3.98E-09	2.07E-10	0.55	0.40
GO:0043241	protein complex disassembly	Biological Process	The disaggregation of a protein complex into its constituent components. Protein complexes may have other associated non-protein prosthetic groups, such as nucleic acids, metal ions or carbohydrate groups.	98	34	75	207	8.16E-09	3.64E-09	0.47	0.37
GO:0044391	ribosomal subunit	Cellular Component	Either of the two subunits of a ribosome: the ribosomal large subunit or the ribosomal small subunit.	70	24	40	134	1.01E-08	3.72E-09	0.52	-
GO:0006413	translational initiation	Biological Process	The process preceding formation of the peptide bond between the first two amino acids of a protein. This includes the formation of a complex of the ribosome, mRNA, and an initiation complex that contains the first aminoacyl-tRNA.	102	29	79	210	1.05E-08	3.00E-10	0.49	0.41
GO:0043624	cellular protein complex disassembly	Biological Process	The disaggregation of a protein complex into its constituent components, occurring at the level of an individual cell. Protein complexes may have other associated non-protein prosthetic groups, such as nucleic acids, metal ions or carbohydrate groups.	91	31	65	187	1.12E-08	2.31E-09	0.49	0.37
GO:0032984	macromolecular complex disassembly	Biological Process	The disaggregation of a macromolecular complex into its constituent components.	101	34	79	214	1.15E-08	2.62E-09	0.47	0.38
GO:0019080	viral gene expression	Biological Process	A process by which a viral gene is converted into a mature gene product or products (proteins or RNA). This includes viral transcription, processing to produce a mature RNA product, and viral translation.	63	20	31	114	1.17E-08	1.16E-09	0.55	0.35
GO:0003735	structural constituent of ribosome	Molecular Function	The action of a molecule that contributes to the structural integrity of the ribosome.	72	21	46	139	1.27E-08	3.63E-09	0.52	0.35
GO:0000184	nuclear-transcribed mRNA catabolic process, nonsense-mediated decay	Biological Process	The nonsense-mediated decay pathway for nuclear-transcribed mRNAs degrades mRNAs in which an amino-acid codon has changed to a nonsense codon; this prevents the translation of such mRNAs into truncated, and potentially harmful, proteins.	61	14	35	110	1.57E-08	1.76E-09	0.55	0.33
GO:0022625	cytosolic large ribosomal subunit	Cellular Component	The large subunit of a ribosome located in the cytosol.	34	7	9	50	1.71E-08	5.72E-09	0.68	-
GO:0006415	translational termination	Biological Process	The process resulting in the release of a polypeptide chain from the ribosome, usually in response to a termination codon (UAA, UAG, or UGA in the universal genetic code).	80	27	54	161	2.38E-08	6.24E-09	0.50	0.34
GO:0044033	multi-organism metabolic process	Biological Process	A metabolic process - chemical reactions and pathways, including anabolism and catabolism, by which living organisms transform chemical substances - which involves more than one organism.	64	21	35	120	4.80E-08	5.83E-09	0.53	0.33