Citation Report
List of articles citing

CRISPR provides acquired resistance against viruses in proka

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#	Paper	IF	Citations
2244	Proxy Votes in Elections at the Royal Medical Benevolent College. **1857**, s4-1, 447-447		
2243	RISCy business: MicroRNAs, pathogenesis, and viruses. **2007**, 282, 26641-26645		75
2242	Curated list of prokaryote viruses with fully sequenced genomes. **2007**, 158, 555-66		36
2241	The genomics of lactic acid bacteria. **2007**, 15, 546-53		121
2240	Hypervariation and phase variation in the bacteriophage 'resistome'. **2007**, 10, 396-400		67
2239	Efficient method for generation of bacteriophage insensitive mutants of Streptococcus thermophilus yoghurt and mozzarella strains. **2007**, 70, 159-64		23
2238	Evolutionary conservation of sequence and secondary structures in CRISPR repeats. **2007**, 8, R61		331
2237	Genomics of Actinobacteria: tracing the evolutionary history of an ancient phylum. **2007**, 71, 495-548		680
2236	CRISPRFinder: a web tool to identify clustered regularly interspaced short palindromic repeats. **2007**, 35, W52-7		1304
2235	Hitting bacteria at the heart of the central dogma: sequence-specific inhibition. **2007**, 6, 24		70
2234	Clusters of orthologous genes for 41 archaeal genomes and implications for evolutionary genomics of archaea. **2007**, 2, 33		146
2233	First evidence of prokaryotic RNAi?. **2007**, 5, 329-329		
2232	Rapidly evolving CRISPRs implicated in acquired resistance of microorganisms to viruses. **2008**, 10, 200-7		242
2231	The CRISPRdb database and tools to display CRISPRs and to generate dictionaries of spacers and repeats. **2007**, 8, 172		708
2230	CRISPR recognition tool (CRT): a tool for automatic detection of clustered regularly interspaced palindromic repeats. **2007**, 8, 209		482
2229	Use of cluster-graphs from spoligotyping data to study genotype similarities and a comparison of three indices to quantify recent tuberculosis transmission among culture positive cases in French Guiana during a eight year period. **2008**, 8, 46		15
2228	X-ray crystal structure of a CRISPR-associated protein, Cse2, from Thermus thermophilus HB8. **2008**, 73, 1063-7		22

2227	The lifestyle of Corynebacterium urealyticum derived from its complete genome sequence established by pyrosequencing. **2008**, 136, 11-21		73
2226	Environmental genomics reveals a single-species ecosystem deep within Earth. *Science*, **2008**, 322, 275-833.3		344
2225	Virus population dynamics and acquired virus resistance in natural microbial communities. *Science*, **2008**, 320, 1047-50	33.3	392
2224	Patchy distribution of flexible genetic elements in bacterial populations mediates robustness to environmental uncertainty. **2008**, 65, 361-71		38
2223	CRISPR--a widespread system that provides acquired resistance against phages in bacteria and archaea. **2008**, 6, 181-6		630
2222	Models of deletion for visualizing bacterial variation: an application to tuberculosis spoligotypes. **2008**, 9, 496		43
2221	Genome sequence and rapid evolution of the rice pathogen Xanthomonas oryzae pv. oryzae PXO99A. **2008**, 9, 204		275
2220	Genomics of dairy fermentations. **2008**, 1, 435-42		7
2219	RecQ and RecG helicases have distinct roles in maintaining the stability of polypurine.polypyrimidine sequences. **2008**, 643, 20-8		12
2218	Phage response to CRISPR-encoded resistance in Streptococcus thermophilus. **2008**, 190, 1390-400		897
2217	Complete genome sequence of the extremely acidophilic methanotroph isolate V4, Methylacidiphilum infernorum, a representative of the bacterial phylum Verrucomicrobia. **2008**, 3, 26		168
2216	Bacteriophages in Industry. **2008**,		1
2215	Encapsulated in silica: genome, proteome and physiology of the thermophilic bacterium Anoxybacillus flavithermus WK1. **2008**, 9, R161		58
2214	Large scale variation in Enterococcus faecalis illustrated by the genome analysis of strain OG1RF. **2008**, 9, R110		204
2213	Genomic context analysis in Archaea suggests previously unrecognized links between DNA replication and translation. **2008**, 9, R71		23
2212	Progress of Antisense Technology Applied in Metabolic Regulation of Bacteria. **2008**, 24, 1689-1694		1
2211	CRISPR interference limits horizontal gene transfer in staphylococci by targeting DNA. *Science*, **2008**, 322, 1843-5	33.3	1181
2210	The elusive object of desire--interactions of bacteriophages and their hosts. **2008**, 11, 186-93		37

2209	Microbiology: what now?. **2008**, 159, 51-8		2
2208	Comparative genomics of the mycobacteriophages: insights into bacteriophage evolution. **2008**, 159, 332-9		65
2207	Origins and evolution of eukaryotic RNA interference. **2008**, 23, 578-87		326
2206	Small CRISPR RNAs guide antiviral defense in prokaryotes. *Science*, **2008**, 321, 960-4	33.3	1698
2205	On-line resources for bacterial micro-evolution studies using MLVA or CRISPR typing. **2008**, 90, 660-8		107
2204	Genomics of bacteria and archaea: the emerging dynamic view of the prokaryotic world. **2008**, 36, 6688-719		513
2203	Diversity, activity, and evolution of CRISPR loci in Streptococcus thermophilus. **2008**, 190, 1401-12		586
2202	Genome sequence of Lactobacillus helveticus, an organism distinguished by selective gene loss and insertion sequence element expansion. **2008**, 190, 727-35		169
2201	A novel family of sequence-specific endoribonucleases associated with the clustered regularly interspaced short palindromic repeats. **2008**, 283, 20361-71		156
2200	CRISPRcompar: a website to compare clustered regularly interspaced short palindromic repeats. **2008**, 36, W145-8		105
2199	A diversity of uncharacterized reverse transcriptases in bacteria. **2008**, 36, 7219-29		71
2198	Hydrogenomics of the extremely thermophilic bacterium Caldicellulosiruptor saccharolyticus. **2008**, 74, 6720-9		132
2197	A bacterial metapopulation adapts locally to phage predation despite global dispersal. **2008**, 18, 293-7		119
2196	Prokaryotic silencing (psi)RNAs in Pyrococcus furiosus. **2008**, 14, 2572-9		195
2195	"Candidatus Cloacamonas acidaminovorans": genome sequence reconstruction provides a first glimpse of a new bacterial division. **2008**, 190, 2572-9		268
2194	Insights from the complete genome sequence of Mycobacterium marinum on the evolution of Mycobacterium tuberculosis. **2008**, 18, 729-41		389
2193	Genome sequence of a nephritogenic and highly transformable M49 strain of Streptococcus pyogenes. **2008**, 190, 7773-85		92
2192	Chromosomal toxin-antitoxin systems may act as antiaddiction modules. **2008**, 190, 4603-9		96

2191	Insights into plant cell wall degradation from the genome sequence of the soil bacterium Cellvibrio japonicus. **2008**, 190, 5455-63		140
2190	Genome sequence of Thermofilum pendens reveals an exceptional loss of biosynthetic pathways without genome reduction. **2008**, 190, 2957-65		49
2189	Population genomic analysis of strain variation in Leptospirillum group II bacteria involved in acid mine drainage formation. **2008**, 6, e177		106
2188	Complete genome sequence of the N2-fixing broad host range endophyte Klebsiella pneumoniae 342 and virulence predictions verified in mice. **2008**, 4, e1000141		200
2187	Genome analysis of food grade lactic Acid-producing bacteria: from basics to applications. **2008**, 9, 169-83		34
2186	Insight into microevolution of Yersinia pestis by clustered regularly interspaced short palindromic repeats. **2008**, 3, e2652		128
2185	Characterization of Streptococcus gordonii prophage PH15: complete genome sequence and functional analysis of phage-encoded integrase and endolysin. **2008**, 154, 2970-2978		14
2184	Cas6 is an endoribonuclease that generates guide RNAs for invader defense in prokaryotes. **2008**, 22, 3489-96		426
2183	Structure of the acidianus filamentous virus 3 and comparative genomics of related archaeal lipothrixviruses. **2008**, 82, 371-81		43
2182	Extensive genome rearrangements and multiple horizontal gene transfers in a population of pyrococcus isolates from Vulcano Island, Italy. **2008**, 74, 6447-51		20
2181	Systematic survey for novel types of prokaryotic retroelements based on gene neighborhood and protein architecture. **2008**, 25, 1395-404		37
2180	Unraveling microbial interactions in food fermentations: from classical to genomics approaches. **2008**, 74, 4997-5007		200
2179	Molecular biology. Secret weapon. *Science*, **2008**, 321, 922-3	33.3	7
2178	Introduction of automatically generated comment in clinical biochemistry: an audit of technical effectiveness. **2008**, 65, 102-3		
2177	Comparison of clustered, regularly interspaced short palindrome repeats (CRISPRs) in viridans streptococci (Streptococcus gordonii, S. mutans, S. sanguinis, S. thermophilus) and in S. pneumoniae. **2008**, 65, 104-8		2
2176	Genome biology of Actinobacillus pleuropneumoniae JL03, an isolate of serotype 3 prevalent in China. **2008**, 3, e1450		56
2175	The fascinating world of RNA interference. **2009**, 5, 97-117		47
2174	The complete genome of Teredinibacter turnerae T7901: an intracellular endosymbiont of marine wood-boring bivalves (shipworms). **2009**, 4, e6085		76

2173	The association of virulence factors with genomic islands. **2009**, 4, e8094		98
2172	Complete genome sequence of the anaerobic, protein-degrading hyperthermophilic crenarchaeon Desulfurococcus kamchatkensis. **2009**, 191, 2371-9		33
2171	Comparison of the complete genome sequences of Bifidobacterium animalis subsp. lactis DSM 10140 and Bl-04. **2009**, 191, 4144-51		128
2170	Characterization of a thermostable archaeal polynucleotide kinase homologous to human Clp1. **2009**, 15, 923-31		25
2169	A unique virus release mechanism in the Archaea. **2009**, 106, 11306-11		110
2168	Microbiology. Variety--the splice of life--in microbial communities. *Science*, **2009**, 326, 1198-9	33.3	22
2167	Analysis of CRISPR in Streptococcus mutans suggests frequent occurrence of acquired immunity against infection by M102-like bacteriophages. **2009**, 155, 1966-1976		90
2166	Interaction between bacteriophage DMS3 and host CRISPR region inhibits group behaviors of Pseudomonas aeruginosa. **2009**, 191, 210-9		201
2165	Local adaptation of bacteriophages to their bacterial hosts in soil. *Science*, **2009**, 325, 833	33.3	125
2164	Metabolic versatility and indigenous origin of the archaeon Thermococcus sibiricus, isolated from a siberian oil reservoir, as revealed by genome analysis. **2009**, 75, 4580-8		76
2163	Large intergenic cruciform-like supermotifs in the Lactobacillus plantarum genome. **2009**, 191, 3420-3		4
2162	Biogeography of the Sulfolobus islandicus pan-genome. **2009**, 106, 8605-10		188
2161	The genome of Thermosipho africanus TCF52B: lateral genetic connections to the Firmicutes and Archaea. **2009**, 191, 1974-8		26
2160	Pathogenomics of mycobacteria. **2009**, 6, 198-210		10
2159	Organised genome dynamics in the Escherichia coli species results in highly diverse adaptive paths. **2009**, 5, e1000344		802
2158	CRISPI: a CRISPR interactive database. **2009**, 25, 3317-8		97
2157	Genome sequence and comparative genome analysis of Lactobacillus casei: insights into their niche-associated evolution. **2009**, 1, 239-57		140
2156	Genomic evidence for the evolution of Streptococcus equi: host restriction, increased virulence, and genetic exchange with human pathogens. **2009**, 5, e1000346		160

2155	Mutagenesis and functional characterization of the RNA and protein components of the toxIN abortive infection and toxin-antitoxin locus of Erwinia. **2009**, 191, 6029-39	63
2154	Novel multiprotein complexes identified in the hyperthermophilic archaeon Pyrococcus furiosus by non-denaturing fractionation of the native proteome. **2009**, 8, 735-51	37
2153	Structural basis for DNase activity of a conserved protein implicated in CRISPR-mediated genome defense. **2009**, 17, 904-12	198
2152	Invasive DNA, chopped and in the CRISPR. **2009**, 17, 786-8	20
2151	CRISPR-based adaptive and heritable immunity in prokaryotes. **2009**, 34, 401-7	373
2150	Comparative genomic analyses of Streptococcus mutans provide insights into chromosomal shuffling and species-specific content. **2009**, 10, 358	56
2149	Genome-scale comparison and constraint-based metabolic reconstruction of the facultative anaerobic Fe(III)-reducer Rhodoferax ferrireducens. **2009**, 10, 447	59
2148	Metagenomic islands of hyperhalophiles: the case of Salinibacter ruber. **2009**, 10, 570	49
2147	The genome sequence of Geobacter metallireducens: features of metabolism, physiology and regulation common and dissimilar to Geobacter sulfurreducens. **2009**, 9, 109	104
2146	Streptococcus equi bacteriophage SeP9 binds to group C carbohydrate but is not infective for the closely related S. zooepidemicus. **2009**, 135, 304-7	7
2145	SSO1450--a CAS1 protein from Sulfolobus solfataricus P2 with high affinity for RNA and DNA. **2009**, 583, 1928-32	35
2144	Comparative analysis of CRISPR loci in lactic acid bacteria genomes. **2009**, 131, 62-70	222
2143	The long and the short of noncoding RNAs. **2009**, 21, 416-25	274
2142	CRISPR elements in the Thermococcales: evidence for associated horizontal gene transfer in Pyrococcus furiosus. **2009**, 50, 421-30	31
2141	X-ray crystal structure of a CRISPR-associated RAMP module [corrected] Cmr5 protein [corrected] from Thermus thermophilus HB8. **2009**, 75, 528-32	24
2140	CRISPR families of the crenarchaeal genus Sulfolobus: bidirectional transcription and dynamic properties. **2009**, 72, 259-72	194
2139	Genomic islands link secondary metabolism to functional adaptation in marine Actinobacteria. **2009** , 3, 1193-203	153
2138	In situ transcriptomic analysis of the globally important keystone N2-fixing taxon Crocosphaera watsonii. **2009**, 3, 618-31	52

2137	A phylogeny-driven genomic encyclopaedia of Bacteria and Archaea. **2009**, 462, 1056-60	803
2136	Genome-scale analyses of health-promoting bacteria: probiogenomics. **2009**, 7, 61-71	334
2135	RNA-based viral immunity initiated by the Dicer family of host immune receptors. **2009**, 227, 176-88	150
2134	Genomics of lactic acid bacteria. **2009**, 292, 1-6	36
2133	The serotype-specific glucose side chain of rhamnose-glucose polysaccharides is essential for adsorption of bacteriophage M102 to Streptococcus mutans. **2009**, 294, 68-73	22
2132	Analysis of CRISPR system function in plant pathogen Xanthomonas oryzae. **2009**, 296, 110-6	60
2131	The dynamic genetic repertoire of microbial communities. **2009**, 33, 109-32	85
2130	Genesis, effects and fates of repeats in prokaryotic genomes. **2009**, 33, 539-71	109
2129	Viral biogeography revealed by signatures in Sulfolobus islandicus genomes. **2009**, 11, 457-66	142
2128	Contribution of mobile genetic elements to Desulfovibrio vulgaris genome plasticity. **2009**, 11, 2244-52	19
2127	Population biology of the human restricted pathogen, Streptococcus pyogenes. **2009**, 9, 581-93	73
2126	Studying the mechanism of RNA separations using RNA chromatography and its application in the analysis of ribosomal RNA and RNA:RNA interactions. **2009**, 1216, 1377-82	28
2125	Antiviral immunity in drosophila. **2009**, 21, 3-9	105
2124	Connections between antiviral defense and autoimmunity. **2009**, 21, 244-50	26
2123	Comparative analyses of prophage-like elements present in bifidobacterial genomes. **2009**, 75, 6929-36	40
2122	Assessment of the Evolutionary Origin and Possibility of CRISPR-Cas (CASS) Interference Pathway in Vibrio cholerae O395. **2009**, 9, 245-254	16
2121	The many pathways of RNA degradation. **2009**, 136, 763-76	768
2120	RNA-guided RNA cleavage by a CRISPR RNA-Cas protein complex. **2009**, 139, 945-56	770

2119	RNAi: prokaryotes get in on the act. **2009**, 139, 863-5	20
2118	Streptococcus thermophilus phage monitoring in a cheese factory: Phage characteristics and starter sensitivity. **2009**, 19, 476-480	16
2117	A Bifidobacterium mixed-species microarray for high resolution discrimination between intestinal bifidobacteria. **2009**, 76, 269-77	23
2116	Community genomic and proteomic analyses of chemoautotrophic iron-oxidizing "Leptospirillum rubarum" (Group II) and "Leptospirillum ferrodiazotrophum" (Group III) bacteria in acid mine drainage biofilms. **2009**, 75, 4599-615	149
2115	Regulatory RNAs in bacteria. **2009**, 136, 615-28	1180
2114	Evidence for the presence of restriction/modification systems in Lactobacillus delbrueckii. **2009**, 76, 433-40	21
2113	Is evolution Darwinian or/and Lamarckian?. **2009**, 4, 42	184
2112	The Bifidobacterium dentium Bd1 genome sequence reflects its genetic adaptation to the human oral cavity. **2009**, 5, e1000785	120
2111	Short motif sequences determine the targets of the prokaryotic CRISPR defence system. **2009**, 155, 733-740	1001
2110	Fat-free yogurt made using a galactose-positive exopolysaccharide-producing recombinant strain of Streptococcus thermophilus. **2009**, 92, 477-82	37
2109	Distribution of CRISPR spacer matches in viruses and plasmids of crenarchaeal acidothermophiles and implications for their inhibitory mechanism. **2009**, 37, 23-8	86
2108	The Production, Application and Action of Lactic Cheese Starter Cultures. **2010**, 166-192	12
2107	??????????GenomeMatcher. **2010**, 48, 313-319	
2106	Repeats in bacterial genome: Evolutionary considerations. **2010**, 25, 56-65	2
2105	Phage resistance of a marine bacterium, Roseobacter denitrificans OCh114, as revealed by comparative proteomics. **2010**, 61, 141-7	16
2104	An overview of RNAs with regulatory functions in gram-positive bacteria. **2010**, 67, 217-37	81
2103	Comparative genome analysis of Prevotella ruminicola and Prevotella bryantii: insights into their environmental niche. **2010**, 60, 721-9	192
2102	Evolution of immune systems from self/not self to danger to artificial immune systems (AIS). **2010**, 7, 55-78	61

2101	RNA-mediated regulation in bacteria: from natural to artificial systems. **2010**, 27, 222-35	29
2100	Self-targeting by CRISPR: gene regulation or autoimmunity?. **2010**, 26, 335-40	278
2099	Assembly complexity of prokaryotic genomes using short reads. **2010**, 11, 21	92
2098	Interference with histidyl-tRNA synthetase by a CRISPR spacer sequence as a factor in the evolution of Pelobacter carbinolicus. **2010**, 10, 230	62
2097	Comparative genomics and proteomics of Helicobacter mustelae, an ulcerogenic and carcinogenic gastric pathogen. **2010**, 11, 164	31
2096	Legionella pneumophila pangenome reveals strain-specific virulence factors. **2010**, 11, 181	140
2095	A genomic perspective on the potential of Actinobacillus succinogenes for industrial succinate production. **2010**, 11, 680	85
2094	Complete genome sequence and lifestyle of black-pigmented Corynebacterium aurimucosum ATCC 700975 (formerly C. nigricans CN-1) isolated from a vaginal swab of a woman with spontaneous abortion. **2010**, 11, 91	30
2093	Mutation rates of spoligotypes and variable numbers of tandem repeat loci in Mycobacterium tuberculosis. **2010**, 10, 1046-51	28
2092	Comparative network clustering of direct repeats (DRs) and cas genes confirms the possibility of the horizontal transfer of CRISPR locus among bacteria. **2010**, 56, 878-87	40
2091	Structure of a CRISPR-associated protein Cas2 from Desulfovibrio vulgaris. **2010**, 66, 1552-6	39
2090	The changing face of dairy starter culture research: From genomics to economics. **2010**, 63, 149-170	38
2089	Mobile genetic elements and their contribution to the emergence of antimicrobial resistant Enterococcus faecalis and Enterococcus faecium. **2010**, 16, 541-54	209
2088	Evidence for bacteriophage activity causing community and performance changes in a phosphorus-removal activated sludge. **2010**, 74, 631-42	41
2087	Identification and characterization of E. coli CRISPR-cas promoters and their silencing by H-NS. **2010**, 75, 1495-512	227
2086	Transcription, processing and function of CRISPR cassettes in Escherichia coli. **2010**, 77, 1367-79	187
2085	H-NS-mediated repression of CRISPR-based immunity in Escherichia coli K12 can be relieved by the transcription activator LeuO. **2010**, 77, 1380-93	182
2084	The on-off switch of CRISPR immunity against phages in Escherichia coli. **2010**, 77, 1341-5	23

2083	CRISPR analysis of bacteriophage-insensitive mutants (BIMs) of industrial Streptococcus thermophilus--implications for starter design. **2010**, 108, 945-955	56
2082	AMD biofilms: using model communities to study microbial evolution and ecological complexity in nature. **2010**, 4, 599-610	164
2081	The complete genome sequence of the algal symbiont Dinoroseobacter shibae: a hitchhiker's guide to life in the sea. **2010**, 4, 61-77	187
2080	Functional genomic signatures of sponge bacteria reveal unique and shared features of symbiosis. **2010**, 4, 1557-67	206
2079	Self versus non-self discrimination during CRISPR RNA-directed immunity. **2010**, 463, 568-71	444
2078	The CRISPR/Cas bacterial immune system cleaves bacteriophage and plasmid DNA. **2010**, 468, 67-71	1462
2077	Microbiology: slicer for DNA. **2010**, 468, 45-6	12
2076	Structural biology: On stress and pressure. **2010**, 468, 46-7	7
2075	CRISPR interference: RNA-directed adaptive immunity in bacteria and archaea. **2010**, 11, 181-90	711
2074	Bacteriophage resistance mechanisms. **2010**, 8, 317-27	1382
2073	Metagenomic analyses of novel viruses and plasmids from a cultured environmental sample of hyperthermophilic neutrophiles. **2010**, 12, 2918-30	35
2072	. **2010**,	20
2071	An□sis comparativo de seis genomas del complejo Mycobacterium tuberculosis. **2010**, 30, 23	2
2070	The complete genome sequence of Haloferax volcanii DS2, a model archaeon. **2010**, 5, e9605	197
2069	CRISPR associated diversity within a population of Sulfolobus islandicus. **2010**, 5, e12988	83
2068	A minimal model for multiple epidemics and immunity spreading. **2010**, 5, e13326	23
2067	Crucial role for insertion sequence elements in Lactobacillus helveticus evolution as revealed by interstrain genomic comparison. **2010**, 76, 212-20	13
2066	Completed genome sequence of the anaerobic iron-oxidizing bacterium Acidovorax ebreus strain TPSY. **2010**, 192, 1475-6	67

2065	Evolutionary dynamics of clustered irregularly interspaced short palindromic repeat systems in the ocean metagenome. **2010**, 76, 2136-44	36
2064	Population Genetics of Streptococcus. **2010**, 345-377	1
2063	Enigmatic, ultrasmall, uncultivated Archaea. **2010**, 107, 8806-11	231
2062	The Escherichia coli CRISPR system protects from lysogenization, lysogens, and prophage induction. **2010**, 192, 6291-4	131
2061	Evolution and population structure of Salmonella enterica serovar Newport. **2010**, 192, 6465-76	87
2060	Lactococcal abortive infection protein AbiV interacts directly with the phage protein SaV and prevents translation of phage proteins. **2010**, 76, 7085-92	19
2059	On Griffiths and Gray Concept of Expanded and Diffused Inheritance. **2010**, 5, 206-215	4
2058	Heterogeneous diversity of spacers within CRISPR (clustered regularly interspaced short palindromic repeats). **2010**, 105, 128102	46
2057	Bacteriophages of Lactic Acid Bacteria. 111-123	2
2056	Genomic insights into bifidobacteria. **2010**, 74, 378-416	186
2055	Bacterial lifestyle in a deep-sea hydrothermal vent chimney revealed by the genome sequence of the thermophilic bacterium Deferribacter desulfuricans SSM1. **2010**, 17, 123-37	31
2054	Comparative genomics and transduction potential of Enterococcus faecalis temperate bacteriophages. **2010**, 192, 1122-30	62
2053	CRISPR-mediated phage resistance and the ghost of coevolution past. **2010**, 277, 2097-103	63
2052	Advances and Trends in Starter Cultures for Dairy Fermentations. 177-192	14
2051	Delineation and analysis of chromosomal regions specifying Yersinia pestis. **2010**, 78, 3930-41	15
2050	Nasty viruses, costly plasmids, population dynamics, and the conditions for establishing and maintaining CRISPR-mediated adaptive immunity in bacteria. **2010**, 6, e1001171	93
2049	Trade-offs between competition and defense specialists among unicellular planktonic organisms: the "killing the winner" hypothesis revisited. **2010**, 74, 42-57	232
2048	Livestock-associated methicillin-resistant Staphylococcus aureus sequence type 398 in humans, Canada. **2010**, 16, 587-94	83

2047 Impact of CRIPSR immunity on the emergence of bacterial pathogens. **2010**, 5, 693-5 7

2046 Bacteriophage cocktail for the prevention of biofilm formation by Pseudomonas aeruginosa on catheters in an in vitro model system. **2010**, 54, 397-404 255

2045 The complete genome of Propionibacterium freudenreichii CIRM-BIA1, a hardy actinobacterium with food and probiotic applications. **2010**, 5, e11748 131

2044 The small, slow and specialized CRISPR and anti-CRISPR of Escherichia and Salmonella. **2010**, 5, e11126 172

2043 CRISPR/Cas system and its role in phage-bacteria interactions. **2010**, 64, 475-93 405

2042 Mycobacteriophages: genes and genomes. **2010**, 64, 331-56 81

2041 How many antiviral small interfering RNAs may be encoded by the mammalian genomes?. **2010**, 5, 62 9

2040 Multidrug-resistant enterococci lack CRISPR-cas. **2010**, 1, 286

2039 Development of a versatile procedure based on natural transformation for marker-free targeted genetic modification in Streptococcus thermophilus. **2010**, 76, 7870-7 38

2038 Binding and cleavage of CRISPR RNA by Cas6. **2010**, 16, 2181-8 126

2037 CRISPR/Cas, the immune system of bacteria and archaea. *Science*, **2010**, 327, 167-70 33.3 1575

2036 Horizontal gene transfer and the genomics of enterococcal antibiotic resistance. **2010**, 13, 632-9 185

2035 The CRISPR system: small RNA-guided defense in bacteria and archaea. **2010**, 37, 7-19 264

2034 Streptococcus thermophilus bacteriophages. **2010**, 20, 657-664 48

2033 Transcription profile of Thermus thermophilus CRISPR systems after phage infection. **2010**, 395, 270-81 97

2032 Clanistics: a multi-level perspective for harvesting unrooted gene trees. **2010**, 18, 341-7 15

2031 Genomic evolution of domesticated microorganisms. **2010**, 1, 397-414 47

2030 Sequence- and structure-specific RNA processing by a CRISPR endonuclease. *Science*, **2010**, 329, 1355-8 33.3 504

2029	The accessory genome of Pseudomonas aeruginosa. **2010**, 74, 621-41	183
2028	Diversity of CRISPR loci in Escherichia coli. **2010**, 156, 1351-61	149
2027	Small variable segments constitute a major type of diversity of bacterial genomes at the species level. **2010**, 11, R45	14
2026	The Role of RNA Interference in theDrosophilaAntiviral Immune Response. **2010**, 81, 99-104	
2025	Genomic structure of an economically important cyanobacterium, Arthrospira (Spirulina) platensis NIES-39. **2010**, 17, 85-103	88
2024	A Nitrospira metagenome illuminates the physiology and evolution of globally important nitrite-oxidizing bacteria. **2010**, 107, 13479-84	488
2023	The Streptococcus thermophilus CRISPR/Cas system provides immunity in Escherichia coli. **2011**, 39, 9275-82	546
2022	CRISPR distribution within the Escherichia coli species is not suggestive of immunity-associated diversifying selection. **2011**, 193, 2460-7	109
2021	Analysis of streptococcal CRISPRs from human saliva reveals substantial sequence diversity within and between subjects over time. **2011**, 21, 126-36	90
2020	Diversity, evolution, and functionality of clustered regularly interspaced short palindromic repeat (CRISPR) regions in the fire blight pathogen Erwinia amylovora. **2011**, 77, 3819-29	73
2019	Novel virulence gene and clustered regularly interspaced short palindromic repeat (CRISPR) multilocus sequence typing scheme for subtyping of the major serovars of Salmonella enterica subsp. enterica. **2011**, 77, 1946-56	108
2018	Isolation and characterization of two bacteriophages with strong in vitro antimicrobial activity against Pseudomonas aeruginosa isolated from dogs with ocular infections. **2011**, 72, 1079-86	7
2017	Subtyping Salmonella enterica serovar enteritidis isolates from different sources by using sequence typing based on virulence genes and clustered regularly interspaced short palindromic repeats (CRISPRs). **2011**, 77, 4520-6	75
2016	Lactic Acid Bacteria Defenses Against Phages. **2011**, 459-478	3
2015	Bacteriophages of lactic acid bacteria and their impact on milk fermentations. **2011**, 10 Suppl 1, S20	153
2014	Csy4 is responsible for CRISPR RNA processing in Pectobacterium atrosepticum. **2011**, 8, 517-28	92
2013	Clustered regularly interspaced short palindromic repeats (CRISPRs): the hallmark of an ingenious antiviral defense mechanism in prokaryotes. **2011**, 392, 277-89	121
2012	Direct detection of chicken genomic DNA for gender determination by thymine-DNA glycosylase. **2011**, 52, 58-65	6

2011	CRISPR/Cas System and Resistance to Bacteriophage Infection. **2011**,	
2010	Structures of the RNA-guided surveillance complex from a bacterial immune system. **2011**, 477, 486-489	299
2009	Structure and activity of the Cas3 HD nuclease MJ0384, an effector enzyme of the CRISPR interference. **2011**, 30, 4616-27	104
2008	RNA interactions. **2011**, 722, 20-38	6
2007	Programmed DNA elimination in Tetrahymena: a small RNA-mediated genome surveillance mechanism. **2011**, 722, 156-73	23
2006	CRISPR-based adaptive immune systems. **2011**, 14, 321-7	306
2005	Truncated Rv2820c enhances mycobacterial virulence ex vivo and in vivo. **2011**, 50, 331-5	4
2004	The structure of the CRISPR-associated protein Csa3 provides insight into the regulation of the CRISPR/Cas system. **2011**, 405, 939-55	72
2003	Archaeal CRISPR-based immune systems: exchangeable functional modules. **2011**, 19, 549-56	84
2002	CRISPR/Cas and Cmr modules, mobility and evolution of adaptive immune systems. **2011**, 162, 27-38	80
2001	Evolution and classification of the CRISPR-Cas systems. **2011**, 9, 467-77	1604
2000	Horizontal gene transfers with or without cell fusions in all categories of the living matter. **2011**, 714, 5-89	14
1999	Crystal ball - 2011. **2011**, 3, 1-26	8
1998	Microbiology of 'Candidatus Accumulibacter' in activated sludge. **2011**, 4, 603-19	74
1997	Short communication: the complete genome sequence of Bifidobacterium animalis subspecies animalis ATCC 25527(T) and comparative analysis of growth in milk with B. animalis subspecies lactis DSM 10140(T). **2011**, 94, 5864-70	10
1996	Structural and functional characterization of an archaeal clustered regularly interspaced short palindromic repeat (CRISPR)-associated complex for antiviral defense (CASCADE). **2011**, 286, 21643-56	174
1995	RNA-guided complex from a bacterial immune system enhances target recognition through seed sequence interactions. **2011**, 108, 10092-7	345
1994	Is the genetic landscape of the deep subsurface biosphere affected by viruses?. **2011**, 2, 219	38

1993	The complete genome sequence of Thermoproteus tenax: a physiologically versatile member of the Crenarchaeota. **2011**, 6, e24222	41
1992	New understandings in Streptococcus pyogenes. **2011**, 24, 196-202	42
1991	Prevalence of clustered regulatory interspaced short palindromic repeat (CRISPR)-like sequences in mitis-group streptococci. **2011**, 68, 65-8	2
1990	The Lesser LAB Gods: Pediococcus, Leuconostoc, Weissella, Carnobacterium, and Affiliated Genera. **2011**, 111-140	3
1989	CRISPR-based immune systems of the Sulfolobales: complexity and diversity. **2011**, 39, 51-7	58
1988	Genetics of Lactic Acid Bacteria. **2011**, 35-56	5
1987	Isolation and phenotypic characterization of Lactobacillus casei and Lactobacillus paracasei bacteriophage-resistant mutants. **2011**, 111, 371-81	18
1986	Dangerous weapons: a cautionary tale of CRISPR defence. **2011**, 79, 3-6	4
1985	Dynamic properties of the Sulfolobus CRISPR/Cas and CRISPR/Cmr systems when challenged with vector-borne viral and plasmid genes and protospacers. **2011**, 79, 35-49	184
1984	A dual function of the CRISPR-Cas system in bacterial antivirus immunity and DNA repair. **2011**, 79, 484-502	199
1983	Envelope stress is a trigger of CRISPR RNA-mediated DNA silencing in Escherichia coli. **2011**, 79, 584-99	90
1982	In vivo activity of CRISPR-mediated virus defence in a hyperthermophilic archaeon. **2011**, 80, 481-91	83
1981	Origins of bacterial diversity through horizontal genetic transfer and adaptation to new ecological niches. **2011**, 35, 957-76	383
1980	Using CRISPRs as a metagenomic tool to identify microbial hosts of a diffuse flow hydrothermal vent viral assemblage. **2011**, 77, 120-33	85
1979	Structural basis for CRISPR RNA-guided DNA recognition by Cascade. **2011**, 18, 529-36	425
1978	Recognition and maturation of effector RNAs in a CRISPR interference pathway. **2011**, 18, 688-92	140
1977	An RNA-induced conformational change required for CRISPR RNA cleavage by the endoribonuclease Cse3. **2011**, 18, 680-7	149
1976	Cas3 is a single-stranded DNA nuclease and ATP-dependent helicase in the CRISPR/Cas immune system. **2011**, 30, 1335-42	291

1975	What traits are carried on mobile genetic elements, and why?. **2011**, 106, 1-10	189
1974	Comparative genomics reveals a deep-sea sediment-adapted life style of Pseudoalteromonas sp. SM9913. **2011**, 5, 274-84	86
1973	CRISPR RNA maturation by trans-encoded small RNA and host factor RNase III. **2011**, 471, 602-7	1632
1972	Interaction of the Cas6 riboendonuclease with CRISPR RNAs: recognition and cleavage. **2011**, 19, 257-64	143
1971	Genome instability and epigenetic modification--heritable responses to environmental stress?. **2011**, 14, 260-6	228
1970	Using affinity propagation for identifying subspecies among clonal organisms: lessons from M. tuberculosis. **2011**, 12, 224	17
1969	CRISPR-Cas systems in bacteria and archaea: versatile small RNAs for adaptive defense and regulation. **2011**, 45, 273-97	598
1968	RNA networks in prokaryotes I: CRISPRs and riboswitches. **2011**, 722, 209-20	2
1967	Helicase dissociation and annealing of RNA-DNA hybrids by Escherichia coli Cas3 protein. **2011**, 439, 85-95	50
1966	The tmRNA-tagging mechanism and the control of gene expression: a review. **2011**, 2, 233-46	22
1965	Bacteriophages as twenty-first century antibacterial tools for food and medicine. **2011**, 90, 851-9	58
1964	Manipulation of cellular syntheses and the nature of viruses: The virocell concept. **2011**, 14, 392-399	58
1963	Abwehr gegen Fremd-DNA durch das bakterielle CRISPR/Cas-System. **2011**, 17, 393-395	1
1962	Interactions between marine microorganisms and their phages. **2011**, 56, 1770-1777	11
1961	The use of microbead-based spoligotyping for Mycobacterium tuberculosis complex to evaluate the quality of the conventional method: providing guidelines for Quality Assurance when working on membranes. **2011**, 11, 110	26
1960	Systems solutions by lactic acid bacteria: from paradigms to practice. **2011**, 10 Suppl 1, S2	87
1959	Specialized adaptation of a lactic acid bacterium to the milk environment: the comparative genomics of Streptococcus thermophilus LMD-9. **2011**, 10 Suppl 1, S22	75
1958	Unification of Cas protein families and a simple scenario for the origin and evolution of CRISPR-Cas systems. **2011**, 6, 38	324

1957	The Public Goods Hypothesis for the evolution of life on Earth. **2011**, 6, 41	61
1956	Identification of CRISPR and riboswitch related RNAs among novel noncoding RNAs of the euryarchaeon Pyrococcus abyssi. **2011**, 12, 312	28
1955	Sequence of the hyperplastic genome of the naturally competent Thermus scotoductus SA-01. **2011**, 12, 577	45
1954	The phage-host arms race: shaping the evolution of microbes. **2011**, 33, 43-51	296
1953	Complete genome sequence of Bifidobacterium animalis subsp. lactis BLC1. **2011**, 193, 6387-8	18
1952	Defense islands in bacterial and archaeal genomes and prediction of novel defense systems. **2011**, 193, 6039-56	209
1951	Characterization of the multiple CRISPR loci on Streptomyces linear plasmid pSHK1. **2011**, 43, 630-9	13
1950	pSLA2-M of Streptomyces rochei is a composite linear plasmid characterized by self-defense genes and homology with pSLA2-L. **2011**, 75, 1147-53	10
1949	Structural and biochemical analysis of nuclease domain of clustered regularly interspaced short palindromic repeat (CRISPR)-associated protein 3 (Cas3). **2011**, 286, 31896-903	92
1948	High-temperature protein G is essential for activity of the Escherichia coli clustered regularly interspaced short palindromic repeats (CRISPR)/Cas system. **2011**, 108, 20136-41	69
1947	The CRISPR/Cas immune system is an operon regulated by LeuO, H-NS, and leucine-responsive regulatory protein in Salmonella enterica serovar Typhi. **2011**, 193, 2396-407	77
1946	Functional characterization of bacterial sRNAs using a network biology approach. **2011**, 108, 15522-7	71
1945	Complete genome sequence of Acidaminococcus intestini RYC-MR95, a Gram-negative bacterium from the phylum Firmicutes. **2011**, 193, 7008-9	14
1944	Prevalence, conservation and functional analysis of Yersinia and Escherichia CRISPR regions in clinical Pseudomonas aeruginosa isolates. **2011**, 157, 430-7	68
1943	DMS3-42: the secret to CRISPR-dependent biofilm inhibition in Pseudomonas aeruginosa. **2011**, 193, 3431-2	14
1942	Non-identity-mediated CRISPR-bacteriophage interaction mediated via the Csy and Cas3 proteins. **2011**, 193, 3433-45	112
1941	The population and evolutionary dynamics of Vibrio cholerae and its bacteriophage: conditions for maintaining phage-limited communities. **2011**, 178, 715-25	28
1940	Mature clustered, regularly interspaced, short palindromic repeats RNA (crRNA) length is measured by a ruler mechanism anchored at the precursor processing site. **2011**, 108, 21218-22	163

1939	A screening system for artificial small RNAs that inhibit the growth of Escherichia coli. **2011**, 150, 289-94	5
1938	Crystal structure of clustered regularly interspaced short palindromic repeats (CRISPR)-associated Csn2 protein revealed Ca2+-dependent double-stranded DNA binding activity. **2011**, 286, 30759-30768	44
1937	Streptococcus equi: a pathogen restricted to one host. **2011**, 60, 1231-1240	30
1936	Impact of small repeat sequences on bacterial genome evolution. **2011**, 3, 959-73	58
1935	CRISPR inhibition of prophage acquisition in Streptococcus pyogenes. **2011**, 6, e19543	83
1934	Within-genome evolution of REPINs: a new family of miniature mobile DNA in bacteria. **2011**, 7, e1002132	36
1933	Self and Nonself. **2012**,	5
1932	Ultrafast evolution and loss of CRISPRs following a host shift in a novel wildlife pathogen, Mycoplasma gallisepticum. **2012**, 8, e1002511	95
1931	Persisting viral sequences shape microbial CRISPR-based immunity. **2012**, 8, e1002475	113
1930	Csy4 relies on an unusual catalytic dyad to position and cleave CRISPR RNA. **2012**, 31, 2824-32	77
1929	Function and regulation of clustered regularly interspaced short palindromic repeats (CRISPR) / CRISPR associated (Cas) systems. **2012**, 4, 2291-311	91
1928	Diverse CRISPRs evolving in human microbiomes. **2012**, 8, e1002441	100
1927	The processing of repetitive extragenic palindromes: the structure of a repetitive extragenic palindrome bound to its associated nuclease. **2012**, 40, 9964-79	27
1926	Culture-independent approaches for studying viruses from hypersaline environments. **2012**, 78, 1635-43	47
1925	Native tandem and ion mobility mass spectrometry highlight structural and modular similarities in clustered-regularly-interspaced shot-palindromic-repeats (CRISPR)-associated protein complexes from Escherichia coli and Pseudomonas aeruginosa. **2012**, 11, 1430-41	68
1924	Characterization of CRISPR RNA processing in Clostridium thermocellum and Methanococcus maripaludis. **2012**, 40, 9887-96	96
1923	Small regulatory RNAs in Pseudomonas aeruginosa. **2012**, 9, 364-71	41
1922	Viral diversity threshold for adaptive immunity in prokaryotes. **2012**, 3, e00456-12	83

1921	Cas9-crRNA ribonucleoprotein complex mediates specific DNA cleavage for adaptive immunity in bacteria. **2012**, 109, E2579-86	1637
1920	Identification of novel positive-strand RNA viruses by metagenomic analysis of archaea-dominated Yellowstone hot springs. **2012**, 86, 5562-73	92
1919	A vast collection of microbial genes that are toxic to bacteria. **2012**, 22, 802-9	59
1918	The immune system of halophilic archaea. **2012**, 2, 228-232	17
1917	From Nucleic Acids Sequences to Molecular Medicine. **2012**,	2
1916	Bacteriophages and dairy fermentations. **2012**, 2, 149-158	136
1915	When ribonucleases come into play in pathogens: a survey of gram-positive bacteria. **2012**, 2012, 592196	18
1914	Strategies and mechanisms of resistance to viruses in photosynthetic aquatic microorganisms. **2012** , 3, 1-15	5
1913	An archaeal immune system can detect multiple protospacer adjacent motifs (PAMs) to target invader DNA. **2012**, 287, 33351-63	95
1912	Structure and mechanism of purine-binding riboswitches. **2012**, 45, 345-81	57
1911	Mobile CRISPR/Cas-mediated bacteriophage resistance in Lactococcus lactis. **2012**, 7, e51663	62
1910	Substrate generation for endonucleases of CRISPR/cas systems. **2012**,	1
1909	Comparative genomics and stx phage characterization of LEE-negative Shiga toxin-producing Escherichia coli. **2012**, 2, 133	66
1908	Genomes of surface isolates of Alteromonas macleodii: the life of a widespread marine opportunistic copiotroph. **2012**, 2, 696	70
1907	Memory of viral infections by CRISPR-Cas adaptive immune systems: acquisition of new information. **2012**, 434, 202-9	155
1906	Selective and hyperactive uptake of foreign DNA by adaptive immune systems of an archaeon via two distinct mechanisms. **2012**, 85, 1044-56	118
1905	Proteins and DNA elements essential for the CRISPR adaptation process in Escherichia coli. **2012**, 40, 5569-76	484
1904	CRISPR transcript processing: a mechanism for generating a large number of small interfering RNAs. **2012**, 7, 24	21

1903	Spatial structure and Lamarckian adaptation explain extreme genetic diversity at CRISPR locus. **2012**, 3, e00126-12		39
1902	CRISPR: A Bacterial Immunity System Based on Small RNAs. **2012**, 121-143		1
1901	Small RNAs in streptococci. **2012**, 9, 414-26		23
1900	Presidential address. Transposable elements, epigenetics, and genome evolution. *Science*, **2012**, 338, 758-67	33.3	365
1899	whole-genome sequence of livestock-associated st398 methicillin-resistant staphylococcus aureus Isolated from Humans in Canada. **2012**, 194, 6627-8		32
1898	RNA processing in the minimal organism Nanoarchaeum equitans. **2012**, 13, R63		51
1897	The costs of evolving resistance in heterogeneous parasite environments. **2012**, 279, 1896-903		82
1896	CRISPR interference can prevent natural transformation and virulence acquisition during in vivo bacterial infection. **2012**, 12, 177-86		220
1895	CRISPR-Cas: to take up DNA or not-that is the question. **2012**, 12, 125-6		17
1894	Molecular typing of Mycoplasma agalactiae: tracing European-wide genetic diversity and an endemic clonal population. **2012**, 35, 487-96		19
1893	Insights into the completely annotated genome of Lactobacillus buchneri CD034, a strain isolated from stable grass silage. **2012**, 161, 153-66		73
1892	The bacterial CRISPR/Cas system as analog of the mammalian adaptive immune system. **2012**, 9, 549-54		22
1891	Regulatory RNAs in Prokaryotes. **2012**,		0
1890	Double-stranded endonuclease activity in Bacillus halodurans clustered regularly interspaced short palindromic repeats (CRISPR)-associated Cas2 protein. **2012**, 287, 35943-52		69
1889	Crystal structure of the largest subunit of a bacterial RNA-guided immune complex and its role in DNA target binding. **2012**, 287, 22445-9		28
1888	Evolution of animal Piwi-interacting RNAs and prokaryotic CRISPRs. **2012**, 11, 277-88		11
1887	The CRISPR/Cas adaptive immune system of Pseudomonas aeruginosa mediates resistance to naturally occurring and engineered phages. **2012**, 194, 5728-38		181
1886	Molecular biology. A Swiss army knife of immunity. *Science*, **2012**, 337, 808-9	33.3	8

1885	The impact of genomics on research in diversity and evolution of archaea. **2012**, 77, 799-812	8
1884	Molecular memory of prior infections activates the CRISPR/Cas adaptive bacterial immunity system. **2012**, 3, 945	413
1883	Functional equivalence and evolutionary convergence in complex communities of microbial sponge symbionts. **2012**, 109, E1878-87	261
1882	RNA processing enables predictable programming of gene expression. **2012**, 30, 1002-6	152
1881	Staphylococcal pathogenicity island interference with helper phage reproduction is a paradigm of molecular parasitism. **2012**, 109, 16300-5	86
1880	Prokaryote genome fluidity: toward a system approach of the mobilome. **2012**, 804, 57-80	37
1879	Marine viruses: truth or dare. **2012**, 4, 425-48	344
1878	Tuning in to interference: R-loops and cascade complexes in CRISPR immunity. **2012**, 422, 607-616	20
1877	Essential features and rational design of CRISPR RNAs that function with the Cas RAMP module complex to cleave RNAs. **2012**, 45, 292-302	250
1876	The crystal structure of the CRISPR-associated protein Csn2 from Streptococcus agalactiae. **2012**, 178, 350-62	21
1875	Innate and adaptive immunity in bacteria: mechanisms of programmed genetic variation to fight bacteriophages. **2012**, 24, 15-20	70
1874	Nature and intensity of selection pressure on CRISPR-associated genes. **2012**, 194, 1216-25	69
1873	An evolutionary link between natural transformation and CRISPR adaptive immunity. **2012**, 3,	60
1872	CRISPR immunity relies on the consecutive binding and degradation of negatively supercoiled invader DNA by Cascade and Cas3. **2012**, 46, 595-605	398
1871	Mechanism of foreign DNA selection in a bacterial adaptive immune system. **2012**, 46, 606-15	195
1870	Complete genome sequence, lifestyle, and multi-drug resistance of the human pathogen Corynebacterium resistens DSM 45100 isolated from blood samples of a leukemia patient. **2012**, 13, 141	41
1869	Comparative genomics and transcriptomics of lineages I, II, and III strains of Listeria monocytogenes. **2012**, 13, 144	60
1868	Patterns and architecture of genomic islands in marine bacteria. **2012**, 13, 347	30

1867	Analysis of the Lactobacillus casei supragenome and its influence in species evolution and lifestyle adaptation. **2012**, 13, 533	106
1866	The highly dynamic CRISPR1 system of Streptococcus agalactiae controls the diversity of its mobilome. **2012**, 85, 1057-71	120
1865	A simple biosynthetic pathway for large product generation from small substrate amounts. **2012**, 9, 056004	2
1864	Small RNAs for defence and regulation in archaea. **2012**, 16, 685-96	35
1863	Technical note: development of a quantitative PCR method for monitoring strain dynamics during yogurt manufacture. **2012**, 95, 4868-4872	11
1862	In vivo protein interactions and complex formation in the Pectobacterium atrosepticum subtype I-F CRISPR/Cas System. **2012**, 7, e49549	62
1861	The CRISPRs, they are a-changin': how prokaryotes generate adaptive immunity. **2012**, 46, 311-39	227
1860	The origin of the bacterial immune response. **2012**, 738, 1-13	2
1859	Bacteria-virus coevolution. **2012**, 751, 347-70	48
1858	Cas5d protein processes pre-crRNA and assembles into a cascade-like interference complex in subtype I-C/Dvulg CRISPR-Cas system. **2012**, 20, 1574-84	156
1857	Defense systems up: structure of subtype I-C/Dvulg CRISPR/Cas. **2012**, 20, 1450-2	3
1856	Experimental definition of a clustered regularly interspaced short palindromic duplicon in Escherichia coli. **2012**, 423, 14-6	42
1855	CRISPR-Cas, a prokaryotic adaptive immune system, in endodontic, oral, and multidrug-resistant hospital-acquired Enterococcus faecalis. **2012**, 38, 1511-5	32
1854	The Addiction Module as a Social Force. **2012**, 107-145	12
1853	Role of CRISPR/cas system in the development of bacteriophage resistance. **2012**, 82, 289-338	22
1852	Molecular Biology's Contributions to Geobiology. **2012**, 228-249	1
1851	CRISPR: new horizons in phage resistance and strain identification. **2012**, 3, 143-62	140
1850	Viruses: Essential Agents of Life. **2012**,	7

1849	Evolutionary Systems Biology. **2012**,	24
1848	Insights into the CRISPR/Cas system of Gardnerella vaginalis. **2012**, 12, 301	24
1847	CRISPR typing and subtyping for improved laboratory surveillance of Salmonella infections. **2012**, 7, e36995	157
1846	Phage-induced expression of CRISPR-associated proteins is revealed by shotgun proteomics in Streptococcus thermophilus. **2012**, 7, e38077	63
1845	Cleavage of phage DNA by the Streptococcus thermophilus CRISPR3-Cas system. **2012**, 7, e40913	82
1844	Target motifs affecting natural immunity by a constitutive CRISPR-Cas system in Escherichia coli. **2012**, 7, e50797	47
1843	Genome Sequence of Azospirillum brasilense CBG497 and Comparative Analyses of Azospirillum Core and Accessory Genomes provide Insight into Niche Adaptation. **2012**, 3, 576-602	57
1842	Genomic diversification of enterococci in hosts: the role of the mobilome. **2012**, 3, 95	24
1841	Diversity of Antisense and Other Non-Coding RNAs in Archaea Revealed by Comparative Small RNA Sequencing in Four Pyrobaculum Species. **2012**, 3, 231	34
1840	Comparative genomic and transcriptional analyses of CRISPR systems across the genus Pyrobaculum. **2012**, 3, 251	26
1839	Differential virus host-ranges of the Fuselloviridae of hyperthermophilic Archaea: implications for evolution in extreme environments. **2012**, 3, 295	18
1838	Global analysis of viral infection in an archaeal model system. **2012**, 3, 411	22
1837	Comparative genomics of the Staphylococcus intermedius group of animal pathogens. **2012**, 2, 44	33
1836	The impact of CRISPR repeat sequence on structures of a Cas6 protein-RNA complex. **2012**, 21, 405-17	30
1835	Crystal structure of a Cas6 paralogous protein from Pyrococcus furiosus. **2012**, 80, 1895-900	6
1834	Identification, structural, and biochemical characterization of a group of large Csn2 proteins involved in CRISPR-mediated bacterial immunity. **2012**, 80, 2573-82	22
1833	RNA in defense: CRISPRs protect prokaryotes against mobile genetic elements. **2012**, 4,	58
1832	Comparative analysis of the first complete Enterococcus faecium genome. **2012**, 194, 2334-41	97

1831	Intricate interactions between the bloom-forming cyanobacterium Microcystis aeruginosa and foreign genetic elements, revealed by diversified clustered regularly interspaced short palindromic repeat (CRISPR) signatures. **2012**, 78, 5353-60		39
1830	RNA-guided genetic silencing systems in bacteria and archaea. **2012**, 482, 331-8		1277
1829	Characterization of the CRISPR/Cas subtype I-A system of the hyperthermophilic crenarchaeon Thermoproteus tenax. **2012**, 194, 2491-500		90
1828	CRISPR targeting reveals a reservoir of common phages associated with the human gut microbiome. **2012**, 22, 1985-94		150
1827	Comparative genomic structures of Mycobacterium CRISPR-Cas. **2012**, 113, 2464-73		33
1826	A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. *Science*, **2012**, 337, 816-21	33.3	9062
1825	Crystal structure of Cmr2 suggests a nucleotide cyclase-related enzyme in type III CRISPR-Cas systems. **2012**, 586, 939-45		40
1824	Esre: a novel essential non-coding RNA in Escherichia coli. **2012**, 586, 1195-200		7
1823	Prevalence and characterization of antibiotic resistant Enterococcus faecalis in French cheeses. **2012**, 31, 191-8		67
1822	Comparative genomic analysis of Salmonella enterica subsp. enterica serovar Weltevreden foodborne strains with other serovars. **2012**, 155, 247-56		12
1821	CRISPR in the extended hyp-operon of the cyanobacterium Nostoc sp. strain PCC 7120, characteristics and putative function(s). **2012**, 37, 8828-8833		1
1820	Multiscale model of CRISPR-induced coevolutionary dynamics: diversification at the interface of Lamarck and Darwin. **2012**, 66, 2015-29		78
1819	Structure of the Cmr2 subunit of the CRISPR-Cas RNA silencing complex. **2012**, 20, 545-53		61
1818	Cas protein Cmr2 full of surprises. **2012**, 20, 389-90		3
1817	The rise and fall of CRISPRs--dynamics of spacer acquisition and loss. **2012**, 85, 1021-5		24
1816	Comparisons of clustered regularly interspaced short palindromic repeats and viromes in human saliva reveal bacterial adaptations to salivary viruses. **2012**, 14, 2564-76		51
1815	CRISPR adaptive immunity systems of prokaryotes. **2012**, 46, 175-182		5
1814	Metagenomic analysis of hadopelagic microbial assemblages thriving at the deepest part of Mediterranean Sea, Matapan-Vavilov Deep. **2013**, 15, 167-82		52

1813	CRISPR-Cas systems target a diverse collection of invasive mobile genetic elements in human microbiomes. **2013**, 14, R40	45
1812	Comparative genome characterization of Achromobacter members reveals potential genetic determinants facilitating the adaptation to a pathogenic lifestyle. **2013**, 97, 6413-25	31
1811	CRISPR-Cas. **2013**, 43, 158-165	2
1810	Novel configurations of type I and II CRISPR-Cas systems in Corynebacterium diphtheriae. **2013**, 159, 2118-26	17
1809	Zebrafish: a multifaceted tool for chemical biologists. **2013**, 113, 7952-80	48
1808	Evolution of Adaptive Immunity. **2013**,	
1807	The role of prophage in plant-pathogenic bacteria. **2013**, 51, 429-51	43
1806	Targeted genome modification of crop plants using a CRISPR-Cas system. **2013**, 31, 686-8	1266
1805	dsRNA sensing during viral infection: lessons from plants, worms, insects, and mammals. **2013**, 33, 239-53	14
1804	Virology: Phages hijack a host's defence. **2013**, 494, 433-4	10
1803	Revenge of the phages: defeating bacterial defences. **2013**, 11, 675-87	421
1802	Genome engineering of Drosophila with the CRISPR RNA-guided Cas9 nuclease. **2013**, 194, 1029-35	692
1801	Differentiation of Streptococcus thermophilus strains in commercial Direct Vat Set yoghurt starter. **2013**, 22, 987-991	5
1800	Highly efficient targeted mutagenesis of Drosophila with the CRISPR/Cas9 system. **2013**, 4, 220-8	598
1799	The double-edged sword of CRISPR-Cas systems. **2013**, 23, 15-7	7
1798	Efficient genome editing in plants using a CRISPR/Cas system. **2013**, 23, 1229-32	677
1797	Right of admission reserved, no matter the path. **2013**, 21, 446-8	2
1796	Efficient isolation of specific genomic regions and identification of associated proteins by engineered DNA-binding molecule-mediated chromatin immunoprecipitation (enChIP) using CRISPR. **2013**, 439, 132-6	145

1795	Targeted mutagenesis in rice using CRISPR-Cas system. **2013**, 23, 1233-6		584
1794	Exploiting CRISPR/Cas: interference mechanisms and applications. **2013**, 14, 14518-31		24
1793	Small RNAs in Bacteria. **2013**, 249-255		
1792	Genomic impact of CRISPR immunization against bacteriophages. **2013**, 41, 1383-91		41
1791	Analysis of prophages harbored by the human-adapted subpopulation of Staphylococcus aureus CC398. **2013**, 18, 299-308		31
1790	Isolation of Bacteriophages from Environmental Sources, and Creation and Functional Screening of Phage DNA Libraries. **2013**, 7, 13.3.1		3
1789	DNA motifs determining the efficiency of adaptation into the Escherichia coli CRISPR array. **2013**, 110, 14396-401		53
1788	Structure and activity of the RNA-targeting Type III-B CRISPR-Cas complex of Thermus thermophilus. **2013**, 52, 135-145		173
1787	CRISPR interference (CRISPRi) for sequence-specific control of gene expression. **2013**, 8, 2180-96		677
1786	Genome engineering using the CRISPR-Cas9 system. **2013**, 8, 2281-2308		6243
1785	Toroidal structure and DNA cleavage by the CRISPR-associated [4Fe-4S] cluster containing Cas4 nuclease SSO0001 from Sulfolobus solfataricus. **2013**, 135, 17476-87		41
1784	Comparative genomics of two 'Candidatus Accumulibacter' clades performing biological phosphorus removal. **2013**, 7, 2301-14		75
1783	RNA-dependent DNA endonuclease Cas9 of the CRISPR system: Holy Grail of genome editing?. **2013**, 21, 562-7		53
1782	Antibiotic Resistance in Salmonella enterica Serovar Typhimurium Associates with CRISPR Sequence Type. **2013**, 57, 4282-4289		41
1781	A ruler protein in a complex for antiviral defense determines the length of small interfering CRISPR RNAs. **2013**, 288, 27888-97		91
1780	The Dynamic Genomes of Acidophiles. **2013**, 81-97		1
1779	Dynamic imaging of genomic loci in living human cells by an optimized CRISPR/Cas system. **2013**, 155, 1479-91		1306
1778	An erythroid enhancer of BCL11A subject to genetic variation determines fetal hemoglobin level. *Science*, **2013**, 342, 253-7	33.3	400

1777	The life history of Lactobacillus acidophilus as a probiotic: a tale of revisionary taxonomy, misidentification and commercial success. **2013**, 349, 77-87	84
1776	Use of a promiscuous, constitutively-active bacterial enhancer-binding protein to define the (RpoN) regulon of Salmonella Typhimurium LT2. **2013**, 14, 602	20
1775	CRISPR-MVLST subtyping of Salmonella enterica subsp. enterica serovars Typhimurium and Heidelberg and application in identifying outbreak isolates. **2013**, 13, 254	51
1774	Bacterial strain typing. **2013**, 33, 629-50	34
1773	Postreplication targeting of transformants by bacterial immune systems?. **2013**, 21, 516-21	19
1772	Cas9 as a versatile tool for engineering biology. **2013**, 10, 957-63	897
1771	Probabilistic models for CRISPR spacer content evolution. **2013**, 13, 54	10
1770	RNA-Seq analyses reveal CRISPR RNA processing and regulation patterns. **2013**, 41, 1459-63	13
1769	In vitro reconstitution of Cascade-mediated CRISPR immunity in Streptococcus thermophilus. **2013**, 32, 385-94	188
1768	Adding a cost of resistance description extends the ability of virus-host model to explain observed patterns in structure and function of pelagic microbial communities. **2013**, 15, 1842-52	40
1767	Characterization of CRISPR RNA biogenesis and Cas6 cleavage-mediated inhibition of a provirus in the haloarchaeon Haloferax mediterranei. **2013**, 195, 867-75	34
1766	Bacteriophage genes that inactivate the CRISPR/Cas bacterial immune system. **2013**, 493, 429-32	495
1765	Type II: Streptococcus thermophilus. **2013**, 171-200	1
1764	Type III CRISPR-Cas Systems and the Roles of CRISPR-Cas in Bacterial Virulence. **2013**, 201-219	
1763	crRNA Biogenesis. **2013**, 115-144	4
1762	Evolution and Classification of CRISPR-Cas Systems and Cas Protein Families. **2013**, 61-91	5
1761	CRISPR-Cas Systems to Probe Ecological Diversity and Host Viral Interactions. **2013**, 221-250	2
1760	Regulation of CRISPR-Based Immune Responses. **2013**, 93-113	

1759	Discovery and Seminal Developments in the CRISPR Field. **2013**, 1-31	4
1758	Occurrence, Diversity of CRISPR-Cas Systems and Genotyping Implications. **2013**, 33-59	1
1757	Applications of the Versatile CRISPR-Cas Systems. **2013**, 267-286	1
1756	CRISPRs in the Microbial Community Context. **2013**, 287-291	1
1755	Gut microbiota disturbance during antibiotic therapy: a multi-omic approach. **2013**, 62, 1591-601	371
1754	Comparative genomic analysis and benzene, toluene, ethylbenzene, and o-, m-, and p-xylene (BTEX) degradation pathways of Pseudoxanthomonas spadix BD-a59. **2013**, 79, 663-71	57
1753	Cas3 stimulates runaway replication of a ColE1 plasmid in Escherichia coli and antagonises RNaseHI. **2013**, 10, 770-8	12
1752	The Deep Viriosphere: Assessing the Viral Impact on Microbial Community Dynamics in the Deep Subsurface. **2013**, 75, 649-675	31
1751	Efficient genome editing in zebrafish using a CRISPR-Cas system. **2013**, 31, 227-9	2094
1750	Crystal structure and nucleic acid-binding activity of the CRISPR-associated protein Csx1 of Pyrococcus furiosus. **2013**, 81, 261-70	34
1749	Crystal structure of the Cmr2-Cmr3 subcomplex in the CRISPR-Cas RNA silencing effector complex. **2013**, 425, 3811-23	33
1748	Modeling bacterial immune systems: strategies for expression of toxic - but useful - molecules. **2013**, 112, 139-44	3
1747	First indication for a functional CRISPR/Cas system in Francisella tularensis. **2013**, 303, 51-60	79
1746	Structure of an RNA silencing complex of the CRISPR-Cas immune system. **2013**, 52, 146-52	100
1745	Type II Toxin-Antitoxin Loci: The ccdAB and parDE Families. **2013**, 45-67	2
1744	Physical model of the immune response of bacteria against bacteriophage through the adaptive CRISPR-Cas immune system. **2013**, 10, 025004	19
1743	Transposons, Genomic Shock, and Genome Evolution. **2013**, 181-201	12
1742	Holding a grudge: persisting anti-phage CRISPR immunity in multiple human gut microbiomes. **2013**, 10, 900-6	11

1741	Biotechnology: Rewriting a genome. **2013**, 495, 50-1	121
1740	CRISPR-Cas systems and RNA-guided interference. **2013**, 4, 267-78	126
1739	Dogma derailed: the many influences of RNA on the genome. **2013**, 49, 783-94	129
1738	C/D box sRNA, CRISPR RNA and tRNA processing in an archaeon with a minimal fragmented genome. **2013**, 41, 411-5	5
1737	Repurposing CRISPR as an RNA-guided platform for sequence-specific control of gene expression. **2013**, 152, 1173-83	2988
1736	Recognition and cleavage of a nonstructured CRISPR RNA by its processing endoribonuclease Cas6. **2013**, 21, 385-93	43
1735	RcsB-BglJ-mediated activation of Cascade operon does not induce the maturation of CRISPR RNAs in E. coli K12. **2013**, 10, 708-15	6
1734	Strong bias in the bacterial CRISPR elements that confer immunity to phage. **2013**, 4, 1430	143
1733	A bacteriophage encodes its own CRISPR/Cas adaptive response to evade host innate immunity. **2013**, 494, 489-91	250
1732	Bacteriophages in food fermentations: new frontiers in a continuous arms race. **2013**, 4, 347-68	73
1731	Structure of the Cmr2-Cmr3 subcomplex of the Cmr RNA silencing complex. **2013**, 21, 376-84	39
1730	crRNA and tracrRNA guide Cas9-mediated DNA interference in Streptococcus thermophilus. **2013**, 10, 841-51	150
1729	RNA-guided genome editing la carte. **2013**, 23, 733-4	14
1728	CRISPR-spacer integration reporter plasmids reveal distinct genuine acquisition specificities among CRISPR-Cas I-E variants of Escherichia coli. **2013**, 10, 792-802	103
1727	Distribution and Mechanism of the Type I CRISPR-Cas Systems. **2013**, 145-169	4
1726	A CRISPR/Cas system mediates bacterial innate immune evasion and virulence. **2013**, 497, 254-7	311
1725	Programmable plasmid interference by the CRISPR-Cas system in Thermococcus kodakarensis. **2013**, 10, 828-40	27
1724	CRISPRs of Enterococcus faecalis and E. hirae isolates from pig feces have species-specific repeats but share some common spacer sequences. **2013**, 66, 182-8	6

1723	The ring of confidence: a haloarchaeal CRISPR/Cas system. **2013**, 41, 374-8	13
1722	Phage mutations in response to CRISPR diversification in a bacterial population. **2013**, 15, 463-70	80
1721	The combination of CRISPR-MVLST and PFGE provides increased discriminatory power for differentiating human clinical isolates of Salmonella enterica subsp. enterica serovar Enteritidis. **2013**, 34, 164-73	61
1720	Association between living environment and human oral viral ecology. **2013**, 7, 1710-24	73
1719	CRISPR-mediated defense mechanisms in the hyperthermophilic archaeal genus Sulfolobus. **2013**, 10, 671-8	19
1718	CRISPR decoys: competitive inhibitors of CRISPR immunity. **2013**, 10, 694-9	0
1717	The tracrRNA and Cas9 families of type II CRISPR-Cas immunity systems. **2013**, 10, 726-37	233
1716	Essential requirements for the detection and degradation of invaders by the Haloferax volcanii CRISPR/Cas system I-B. **2013**, 10, 865-74	50
1715	CRISPR-mediated adaptive immune systems in bacteria and archaea. **2013**, 82, 237-66	447
1714	Two CRISPR-Cas systems in Methanosarcina mazei strain G display common processing features despite belonging to different types I and III. **2013**, 10, 779-91	40
1713	High-throughput analysis of type I-E CRISPR/Cas spacer acquisition in E. coli. **2013**, 10, 716-25	86
1712	Evidence for the widespread distribution of CRISPR-Cas system in the Phylum Cyanobacteria. **2013**, 10, 687-93	61
1711	Endowing cells with logic and memory. **2013**, 31, 413-5	8
1710	The dark matter rises: the expanding world of regulatory RNAs. **2013**, 54, 1-16	63
1709	CRISPR-Cas systems preferentially target the leading regions of MOBF conjugative plasmids. **2013**, 10, 749-61	25
1708	Processing-independent CRISPR RNAs limit natural transformation in Neisseria meningitidis. **2013**, 50, 488-503	206
1707	CRISPR-Cas and restriction-modification systems are compatible and increase phage resistance. **2013**, 4, 2087	137
1706	Prokaryotic Toxin-Antitoxins. **2013**,	12

1705	Crystal structure of Cmr5 from Pyrococcus furiosus and its functional implications. **2013**, 587, 562-8	11
1704	The basic building blocks and evolution of CRISPR-CAS systems. **2013**, 41, 1392-400	120
1703	Coevolutionary diversification creates nested-modular structure in phage-bacteria interaction networks. **2013**, 3, 20130033	55
1702	Evolution of CRISPR1 and CRISPR3 in Spontaneous Phage-Resistant Mutants of Streptococcus Thermophilus Strain LBB.A. **2013**, 27, 3966-3971	2
1701	CRISPR-Cas Systems and Cas Protein Families. **2013**, 341-381	1
1700	Speech science: Tuned to the rhythm. **2013**, 494, 434-5	6
1699	In vitro reconstitution of an Escherichia coli RNA-guided immune system reveals unidirectional, ATP-dependent degradation of DNA target. **2013**, 288, 22184-92	139
1698	The automatic annotation of bacterial genomes. **2013**, 14, 1-12	86
1697	The CRISPR-associated gene cas2 of Legionella pneumophila is required for intracellular infection of amoebae. **2013**, 4, e00074-13	67
1696	Evolutionary dynamics of the prokaryotic adaptive immunity system CRISPR-Cas in an explicit ecological context. **2013**, 195, 3834-44	68
1695	Requirements for a successful defence reaction by the CRISPR-Cas subtype I-B system. **2013**, 41, 1444-8	15
1694	CRISPR adaptation in Escherichia coli subtypeI-E system. **2013**, 41, 1412-5	9
1693	The subtype I-F CRISPR-Cas system influences pathogenicity island retention in Pectobacterium atrosepticum via crRNA generation and Csy complex formation. **2013**, 41, 1468-74	19
1692	Are bacteriophage defence and virulence two sides of the same coin in Campylobacter jejuni?. **2013** , 41, 1475-81	6
1691	Porphyromonas gingivalis: keeping the pathos out of the biont. **2013**, 5,	45
1690	Streptococcus zooepidemicus and Streptococcus equi evolution: the role of CRISPRs. **2013**, 41, 1437-43	10
1689	The Cmr complex: an RNA-guided endoribonuclease. **2013**, 41, 1464-7	5
1688	Cytotoxic chromosomal targeting by CRISPR/Cas systems can reshape bacterial genomes and expel or remodel pathogenicity islands. **2013**, 9, e1003454	237

1687	CRISPR interference: a structural perspective. **2013**, 453, 155-66	101
1686	Evolutionary causes and consequences of diversified CRISPR immune profiles in natural populations. **2013**, 41, 1431-6	9
1685	Dealing with the evolutionary downside of CRISPR immunity: bacteria and beneficial plasmids. **2013** , 9, e1003844	157
1684	Genome of the pathogen Porphyromonas gingivalis recovered from a biofilm in a hospital sink using a high-throughput single-cell genomics platform. **2013**, 23, 867-77	51
1683	Comparative genomic and functional analysis of 100 Lactobacillus rhamnosus strains and their comparison with strain GG. **2013**, 9, e1003683	154
1682	New group in the Leptospirillum clade: cultivation-independent community genomics, proteomics, and transcriptomics of the new species "Leptospirillum group IV UBA BS". **2013**, 79, 5384-93	39
1681	Programmable DNA cleavage in vitro by Cas9. **2013**, 41, 1401-6	20
1680	Fifty shades of immune defense. **2013**, 9, e1003110	39
1679	Type I-E CRISPR-cas systems discriminate target from non-target DNA through base pairing-independent PAM recognition. **2013**, 9, e1003742	156
1678	CRISPR-Cas immunity against phages: its effects on the evolution and survival of bacterial pathogens. **2013**, 9, e1003765	27
1677	SMV1 virus-induced CRISPR spacer acquisition from the conjugative plasmid pMGB1 in Sulfolobus solfataricus P2. **2013**, 41, 1449-58	21
1676	Variation of the virus-related elements within syntenic genomes of the hyperthermophilic Archaeon Aeropyrum. **2013**, 79, 5891-8	2
1675	Comparative analysis ofCas6b processing and CRISPR RNA stability. **2013**, 10, 700-7	19
1674	The MASTER (methylation-assisted tailorable ends rational) ligation method for seamless DNA assembly. **2013**, 41, e93	42
1673	Unexpectedly broad target recognition of the CRISPR-mediated virus defence system in the archaeon Sulfolobus solfataricus. **2013**, 41, 10509-17	51
1672	The evolutionary divergence of Shiga toxin-producing Escherichia coli is reflected in clustered regularly interspaced short palindromic repeat (CRISPR) spacer composition. **2013**, 79, 5710-20	55
1671	PRAP: an ab initio software package for automated genome-wide analysis of DNA repeats for prokaryotes. **2013**, 29, 2683-9	9
1670	Comparative genomic analysis of phylogenetically closely related Hydrogenobaculum sp. isolates from Yellowstone National Park. **2013**, 79, 2932-43	28

1669	Crass: identification and reconstruction of CRISPR from unassembled metagenomic data. **2013**, 41, e105	84
1668	Stationary phase and nutrient levels trigger transcription of a genomic locus containing a novel peptide (TM1316) in the hyperthermophilic bacterium Thermotoga maritima. **2013**, 79, 6637-46	0
1667	Massive activation of archaeal defense genes during viral infection. **2013**, 87, 8419-28	65
1666	Reducing assembly complexity of microbial genomes with single-molecule sequencing. **2013**, 14, R101	286
1665	The population and evolutionary dynamics of phage and bacteria with CRISPR-mediated immunity. **2013**, 9, e1003312	126
1664	Comparative genomics of Bifidobacterium animalis subsp. lactis reveals a strict monophyletic bifidobacterial taxon. **2013**, 79, 4304-15	66
1663	CRISPR regulation of intraspecies diversification by limiting IS transposition and intercellular recombination. **2013**, 5, 1099-114	26
1662	Homologous recombination drives both sequence diversity and gene content variation in Neisseria meningitidis. **2013**, 5, 1611-27	33
1661	Bacteriophages infecting Propionibacterium acnes. **2013**, 2013, 705741	10
1660	A novel interference mechanism by a type IIIB CRISPR-Cmr module in Sulfolobus. **2013**, 87, 1088-99	194
1659	Reassortment of CRISPR repeat-spacer loci in Sulfolobus islandicus. **2013**, 15, 3065-76	29
1658	Comparative genomics of defense systems in archaea and bacteria. **2013**, 41, 4360-77	255
1657	Efficient genome engineering in human pluripotent stem cells using Cas9 from Neisseria meningitidis. **2013**, 110, 15644-9	508
1656	Double-strand DNA end-binding and sliding of the toroidal CRISPR-associated protein Csn2. **2013**, 41, 6347-59	37
1655	Isolation, Culture, and Characterization of Bacteriophages. **2013**, 7, 4.4.1	3
1654	CRISPR-Cas: evolution of an RNA-based adaptive immunity system in prokaryotes. **2013**, 10, 679-86	127
1653	Gnotobiotic mouse model of phage-bacterial host dynamics in the human gut. **2013**, 110, 20236-41	226
1652	Genetic determinants of PAM-dependent DNA targeting and pre-crRNA processing in Sulfolobus islandicus. **2013**, 10, 738-48	42

1651	Subtyping of Salmonella enterica serovar Newport outbreak isolates by CRISPR-MVLST and determination of the relationship between CRISPR-MVLST and PFGE results. **2013**, 51, 2328-36		46
1650	Structure and RNA-binding properties of the type III-A CRISPR-associated protein Csm3. **2013**, 10, 1670-8		31
1649	Type 6 secretion system-mediated immunity to type 4 secretion system-mediated gene transfer. *Science*, **2013**, 342, 250-3	33.3	81
1648	Spirulina: an example of cyanobacteria as nutraceuticals. **2013**, 103-118		2
1647	Non-coding RNAs in homeostasis, disease and stress responses: an evolutionary perspective. **2013**, 12, 254-78		79
1646	Diverse functions of restriction-modification systems in addition to cellular defense. **2013**, 77, 53-72		321
1645	Special focus CRISPR-Cas. **2013**, 10, 655-8		6
1644	Protospacer recognition motifs: mixed identities and functional diversity. **2013**, 10, 891-9		245
1643	CRISPRTarget: bioinformatic prediction and analysis of crRNA targets. **2013**, 10, 817-27		184
1642	RNA Silencing in Plants. **2013**, 1-46		
1641	US regulation misses some GM crops. **2013**, 500, 389-90		30
1640	Genome sequence of Phaeobacter caeruleus type strain (DSM 24564T), a surface-associated member of the marine Roseobacter clade. **2013**, 8, 403-419		12
1639	Lactic Acid Bacteria Resistance to Bacteriophage and Prevention Techniques to Lower Phage Contamination in Dairy Fermentation. **2013**,		6
1638	MasABK proteins interact with proteins of the type IV pilin system to affect social motility of Myxococcus xanthus. **2013**, 8, e54557		0
1637	Cyanobacterial defense mechanisms against foreign DNA transfer and their impact on genetic engineering. **2013**, 46, 373-82		31
1636	(Non-)translational medicine: targeting bacterial RNA. **2013**, 4, 230		6
1635	Virus-host and CRISPR dynamics in Archaea-dominated hypersaline Lake Tyrrell, Victoria, Australia. **2013**, 2013, 370871		57
1634	20. The Deep Viriosphere: Assessing the Viral Impact on Microbial Community Dynamics in the Deep Subsurface. **2013**, 649-676		1

1633	Intriguing arms race between phages and hosts and implications for better anti-infectives. **2013**, 23, 215-26	1
1632	MAGNUM OPUS: CLUSTERED REGULARLY INTERSPACED SHORT PALINDROMIC REPEATS BIOLOGY AND PROKARYOTIC GENE SILENCING. **2013**, 9, 110-115	
1631	Investigating the interplay between nucleoid-associated proteins, DNA curvature, and CRISPR elements using comparative genomics. **2014**, 9, e90940	5
1630	sgRNAcas9: a software package for designing CRISPR sgRNA and evaluating potential off-target cleavage sites. **2014**, 9, e100448	218
1629	Optimal defense strategies in an idealized microbial food web under trade-off between competition and defense. **2014**, 9, e101415	22
1628	Evaluation of sgRNA target sites for CRISPR-mediated repression of TP53. **2014**, 9, e113232	38
1627	Disruption of HPV16-E7 by CRISPR/Cas system induces apoptosis and growth inhibition in HPV16 positive human cervical cancer cells. **2014**, 2014, 612823	109
1626	Developments in the tools and methodologies of synthetic biology. **2014**, 2, 60	63
1625	Epigenetic control of mobile DNA as an interface between experience and genome change. **2014**, 5, 87	11
1624	Disruption of human papillomavirus 16 E6 gene by clustered regularly interspaced short palindromic repeat/Cas system in human cervical cancer cells. **2015**, 8, 37-44	19
1623	. **2014**,	13
1622	Different approaches for using bacteriophages against antibiotic-resistant bacteria. **2014**, 4, e28491	15
1621	A theoretical analysis of how strain-specific viruses can control microbial species diversity. **2014**, 111, 7813-8	91
1620	Engineering the control of mosquito-borne infectious diseases. **2014**, 15, 535	46
1619	A CRISPR/Cas9 toolkit for multiplex genome editing in plants. **2014**, 14, 327	669
1618	A complex of Cas proteins 5, 6, and 7 is required for the biogenesis and stability of clustered regularly interspaced short palindromic repeats (crispr)-derived rnas (crrnas) in Haloferax volcanii. **2014**, 289, 7164-7177	55
1617	Motif depletion in bacteriophages infecting hosts with CRISPR systems. **2014**, 15, 663	9
1616	Structural analyses of the CRISPR protein Csc2 reveal the RNA-binding interface of the type I-D Cas7 family. **2014**, 11, 1072-82	14

1615 Detection and characterization of spacer integration intermediates in type I-E CRISPR-Cas system. **2014**, 42, 7884-93 100

1614 Synthetic Biology and Therapies for Infectious Diseases. **2014**, 109-180

1613 COSMID: A Web-based Tool for Identifying and Validating CRISPR/Cas Off-target Sites. **2014**, 3, e214 219

1612 A CRISPR design for next-generation antimicrobials. **2014**, 15, 516 43

1611 Efficient engineering of a bacteriophage genome using the type I-E CRISPR-Cas system. **2014**, 11, 42-4 94

1610 STREPTOCOCCUS | Streptococcus thermophilus. **2014**, 554-559 1

1609 Robust identification of noncoding RNA from transcriptomes requires phylogenetically-informed sampling. **2014**, 10, e1003907 35

1608 A PNPase dependent CRISPR System in Listeria. **2014**, 10, e1004065 68

1607 Identification of diversity-generating retroelements in human microbiomes. **2014**, 15, 14234-46 23

1606 The Subtleties and Contrasts of the LeuO Regulator in Salmonella Typhi: Implications in the Immune Response. **2014**, 5, 581 8

1605 The CRISPR-associated Cas4 protein Pcal_0546 from Pyrobaculum calidifontis contains a [2Fe-2S] cluster: crystal structure and nuclease activity. **2014**, 42, 11144-55 25

1604 Viruses of haloarchaea. **2014**, 4, 681-715 33

1603 Structure and Function of CRISPR-Cas System. **2014**, 54, 247-252

1602 Infectious Microecology. **2014**, 4

1601 Comparative analysis of CRISPR cassettes from the human gut metagenomic contigs. **2014**, 15, 202 21

1600 Characterization of bacteriophage communities and CRISPR profiles from dental plaque. **2014**, 14, 175 41

1599 Diverse and divergent protein post-translational modifications in two growth stages of a natural microbial community. **2014**, 5, 4405 36

1598 Paternally transmitted mitochondria express a new gene of potential viral origin. **2014**, 6, 391-405 42

1597	Modern and simple construction of plasmid: saving time and cost. **2014**, 52, 891-7	9
1596	CRISPR-Cas: an efficient tool for genome engineering of virulent bacteriophages. **2014**, 42, 9504-13	98
1595	CRISPR/Cas9 systems have off-target activity with insertions or deletions between target DNA and guide RNA sequences. **2014**, 42, 7473-85	428
1594	Efficient gene disruption in diverse strains of Toxoplasma gondii using CRISPR/CAS9. **2014**, 5, e01114-14	283
1593	Phylogenomics of "Candidatus Hepatoplasma crinochetorum," a lineage of mollicutes associated with noninsect arthropods. **2014**, 6, 407-15	25
1592	A CRISPR with roles in Myxococcus xanthus development and exopolysaccharide production. **2014**, 196, 4036-43	23
1591	Precisely modulated pathogenicity island interference with late phage gene transcription. **2014**, 111, 14536-41	46
1590	Making designer mutants in model organisms. **2014**, 141, 4042-54	90
1589	Enhancing stem cell survival in an ischemic heart by CRISPR-dCas9-based gene regulation. **2014**, 83, 702-5	7
1588	Comparative analysis of CRISPR loci in different Listeria monocytogenes lineages. **2014**, 454, 399-403	24
1587	NilD CRISPR RNA contributes to Xenorhabdus nematophila colonization of symbiotic host nematodes. **2014**, 93, 1026-42	17
1586	Genome editing. The new frontier of genome engineering with CRISPR-Cas9. *Science*, **2014**, 346, 1258096	3479
1585	Genome engineering in human cells. **2014**, 546, 93-118	10
1584	Inter-viral conflicts that exploit host CRISPR immune systems of Sulfolobus. **2014**, 91, 900-17	59
1583	Cas9-based genome editing in zebrafish. **2014**, 546, 377-413	36
1582	In vitro enzymology of Cas9. **2014**, 546, 1-20	66
1581	Efficient chromosomal gene modification with CRISPR/cas9 and PCR-based homologous recombination donors in cultured Drosophila cells. **2014**, 42, e89	88
1580	CRISPR-mediated targeted mRNA degradation in the archaeon Sulfolobus solfataricus. **2014**, 42, 5280-8	81

1579	Priming in the Type I-F CRISPR-Cas system triggers strand-independent spacer acquisition, bi-directionally from the primed protospacer. **2014**, 42, 8516-26	139
1578	Comparative genomics of closely related Salmonella enterica serovar Typhi strains reveals genome dynamics and the acquisition of novel pathogenic elements. **2014**, 15, 1007	15
1577	Transcriptomic and proteomic dynamics in the metabolism of a diazotrophic cyanobacterium, Cyanothece sp. PCC 7822 during a diurnal light-dark cycle. **2014**, 15, 1185	15
1576	CRISPR-Cas systems in the marine actinomycete Salinispora: linkages with phage defense, microdiversity and biogeography. **2014**, 15, 936	8
1575	Functional genetics for all: engineered nucleases, CRISPR and the gene editing revolution. **2014**, 5, 43	69
1574	Meta-analysis of tRNA derived RNA fragments reveals that they are evolutionarily conserved and associate with AGO proteins to recognize specific RNA targets. **2014**, 12, 78	295
1573	A model for the generation and transmission of variations in evolution. **2014**, 111, E1940-9	66
1572	Non-coding RNAs as potent tools for crop improvement. **2014**, 1, 186-189	4
1571	Staphylococcus epidermidis Csm1 is a 3'-5' exonuclease. **2014**, 42, 1129-38	29
1570	Bacteriophage behavioral ecology: How phages alter their bacterial host's habits. **2014**, 4, e29866	35
1569	Generation of genomic deletions in mammalian cell lines via CRISPR/Cas9. **2015**, e52118	75
1568	CRISPR/Cas9-mediated phage resistance is not impeded by the DNA modifications of phage T4. **2014**, 9, e98811	22
1567	Active site plasticity enables metal-dependent tuning of Cas5d nuclease activity in CRISPR-Cas type I-C system. **2014**, 42, 3846-56	20
1566	Production of Transgenic Rabbits. **2014**, 275-304	1
1565	STARTER CULTURES | Uses in the Food Industry. **2014**, 529-534	5
1564	Expanding the catalog of cas genes with metagenomes. **2014**, 42, 2448-59	17
1563	Synthetic Biology: A Bridge between Artificial and Natural Cells. **2014**, 4, 1092-116	30
1562	Adaptation of the Haloarcula hispanica CRISPR-Cas system to a purified virus strictly requires a priming process. **2014**, 42, 2483-92	124

1561	Diversification of CRISPR within coexisting genotypes in a natural population of the bloom-forming cyanobacterium Microcystis aeruginosa. **2014**, 160, 903-16	22
1560	Antagonistic coevolution of marine planktonic viruses and their hosts. **2014**, 6, 393-414	56
1559	Nucleases for genome editing in crops. **2014**, 3, 14-19	8
1558	Gene expression of Microcystis aeruginosa during infection of cyanomyovirus Ma-LMM01. **2014**, 80, 83-91	7
1557	Molecular mechanisms of CRISPR-mediated microbial immunity. **2014**, 71, 449-65	75
1556	Crystal structure of Cas9 in complex with guide RNA and target DNA. **2014**, 156, 935-49	1131
1555	Gene Correction. **2014**,	
1554	CRISPR-Cas-mediated targeted genome editing in human cells. **2014**, 1114, 245-67	43
1553	CRISPR-Cas systems: beyond adaptive immunity. **2014**, 12, 317-26	213
1552	Crystal structure and CRISPR RNA-binding site of the Cmr1 subunit of the Cmr interference complex. **2014**, 70, 535-43	10
1551	High-throughput screening of a CRISPR/Cas9 library for functional genomics in human cells. **2014**, 509, 487-91	512
1550	Treatment of infectious disease: beyond antibiotics. **2014**, 169, 643-51	77
1549	The role of CRISPR-Cas systems in virulence of pathogenic bacteria. **2014**, 78, 74-88	148
1548	In vitro assembly and activity of an archaeal CRISPR-Cas type I-A Cascade interference complex. **2014**, 42, 5125-38	48
1547	Gene regulation by engineered CRISPR-Cas systems. **2014**, 18, 83-9	29
1546	Guest list or black list: heritable small RNAs as immunogenic memories. **2014**, 24, 212-20	33
1545	E-CRISP: fast CRISPR target site identification. **2014**, 11, 122-3	526
1544	Precision genetic modifications: a new era in molecular biology and crop improvement. **2014**, 239, 921-39	41

1543	CRISPR-based technologies: prokaryotic defense weapons repurposed. **2014**, 30, 111-8		79
1542	Structures of Cas9 endonucleases reveal RNA-mediated conformational activation. *Science*, **2014**, 343, 1247997	33.3	701
1541	CRISPR-Cas systems for editing, regulating and targeting genomes. **2014**, 32, 347-55		2182
1540	A guide to genome engineering with programmable nucleases. **2014**, 15, 321-34		853
1539	The noncoding RNA revolution-trashing old rules to forge new ones. **2014**, 157, 77-94		1466
1538	When a virus is not a parasite: the beneficial effects of prophages on bacterial fitness. **2014**, 52, 235-42		113
1537	Diversity and geographical distribution of Flavobacterium psychrophilum isolates and their phages: patterns of susceptibility to phage infection and phage host range. **2014**, 67, 748-57		20
1536	The contributions of transposable elements to the structure, function, and evolution of plant genomes. **2014**, 65, 505-30		308
1535	CRISPR-Cas system: a powerful tool for genome engineering. **2014**, 85, 209-18		38
1534	Streptococcal Infections. **2014**, 265-277.e4		2
1533	Plasticity in Plant-Growth-Promoting and Phytopathogenic Bacteria. **2014**,		1
1532	Genomic insights into tuberculosis. **2014**, 15, 307-20		143
1531	To acquire or resist: the complex biological effects of CRISPR-Cas systems. **2014**, 22, 218-25		74
1530	Do all creatures possess an acquired immune system of some sort?. **2014**, 36, 273-81		42
1529	A versatile framework for microbial engineering using synthetic non-coding RNAs. **2014**, 12, 341-54		90
1528	Elements and machinery of non-coding RNAs: toward their taxonomy. **2014**, 15, 489-507		63
1527	CasA mediates Cas3-catalyzed target degradation during CRISPR RNA-guided interference. **2014**, 111, 6618-23		153
1526	CRISPR-Cas systems: Prokaryotes upgrade to adaptive immunity. **2014**, 54, 234-44		470

1525	The rise of regulatory RNA. **2014**, 15, 423-37		897
1524	Multigeneration analysis reveals the inheritance, specificity, and patterns of CRISPR/Cas-induced gene modifications in Arabidopsis. **2014**, 111, 4632-7		511
1523	Bacterial genome instability. **2014**, 78, 1-39		239
1522	Fine-mapping natural alleles: quantitative complementation to the rescue. **2014**, 23, 2377-82		28
1521	Endonucleases: new tools to edit the mouse genome. **2014**, 1842, 1942-1950		48
1520	The three major types of CRISPR-Cas systems function independently in CRISPR RNA biogenesis in Streptococcus thermophilus. **2014**, 93, 98-112		60
1519	Impact of CRISPR immunity on the emergence and virulence of bacterial pathogens. **2014**, 17, 82-90		49
1518	Programmable removal of bacterial strains by use of genome-targeting CRISPR-Cas systems. **2014**, 5, e00928-13		236
1517	CRISPR-Cas functional module exchange in Escherichia coli. **2014**, 5, e00767-13		26
1516	CRP represses the CRISPR/Cas system in Escherichia coli: evidence that endogenous CRISPR spacers impede phage P1 replication. **2014**, 92, 1072-91		32
1515	Adapting to new threats: the generation of memory by CRISPR-Cas immune systems. **2014**, 93, 1-9		70
1514	Haloarcula hispanica CRISPR authenticates PAM of a target sequence to prime discriminative adaptation. **2014**, 42, 7226-35		51
1513	Pervasive generation of oppositely oriented spacers during CRISPR adaptation. **2014**, 42, 5907-16		61
1512	Bacteria-phage coevolution as a driver of ecological and evolutionary processes in microbial communities. **2014**, 38, 916-31		369
1511	The evolution of resistance against good and bad infections. **2014**, 27, 303-12		27
1510	Classification and evolution of type II CRISPR-Cas systems. **2014**, 42, 6091-105		288
1509	RNA events. Cas9 targeting and the CRISPR revolution. *Science*, **2014**, 344, 707-8	33.3	62
1508	Association of clustered regularly interspaced short palindromic repeat (CRISPR) elements with specific serotypes and virulence potential of shiga toxin-producing Escherichia coli. **2014**, 80, 1411-20		31

1507	Diversity, evolution, and therapeutic applications of small RNAs in prokaryotic and eukaryotic immune systems. **2014**, 11, 113-34		16
1506	CRISPRs: molecular signatures used for pathogen subtyping. **2014**, 80, 430-9		101
1505	Planting the seed: target recognition of short guide RNAs. **2014**, 22, 74-83		53
1504	Analysis of the complete genome of Fervidococcus fontis confirms the distinct phylogenetic position of the order Fervidicoccales and suggests its environmental function. **2014**, 18, 295-309		12
1503	DNA interrogation by the CRISPR RNA-guided endonuclease Cas9. **2014**, 507, 62-7		1171
1502	Lactobacillus buchneri genotyping on the basis of clustered regularly interspaced short palindromic repeat (CRISPR) locus diversity. **2014**, 80, 994-1001		41
1501	Small RNA-guided adaptive immunity: comment on "Diversity, evolution, and therapeutic applications of small RNAs in prokaryotic and eukaryotic immune systems" by Cooper and Overstreet. **2014**, 11, 139-40; discussion 149-51		3
1500	Genetic screens in human cells using the CRISPR-Cas9 system. *Science*, **2014**, 343, 80-4	33.3	1874
1499	Molecular insights into DNA interference by CRISPR-associated nuclease-helicase Cas3. **2014**, 111, 16359-64		65
1498	Atmospheric chemistry: No equatorial divide for a cleansing radical. **2014**, 513, 176-8		15
1497	RNA targeting by the type III-A CRISPR-Cas Csm complex of Thermus thermophilus. **2014**, 56, 518-30		202
1496	RNA-mediated regulation in Gram-positive pathogens: an overview punctuated with examples from the group A Streptococcus. **2014**, 94, 9-20		17
1495	Guide RNA functional modules direct Cas9 activity and orthogonality. **2014**, 56, 333-339		174
1494	Building high-resolution synthetic lethal networks: a 'Google map' of the cancer cell. **2014**, 20, 704-15		24
1493	Phylogeny of Cas9 determines functional exchangeability of dual-RNA and Cas9 among orthologous type II CRISPR-Cas systems. **2014**, 42, 2577-90		251
1492	Unique genomic arrangements in an invasive serotype M23 strain of Streptococcus pyogenes identify genes that induce hypervirulence. **2014**, 196, 4089-102		19
1491	Remarkable Mechanisms in Microbes to Resist Phage Infections. **2014**, 1, 307-31		148
1490	Mutagenesis and homologous recombination in Drosophila cell lines using CRISPR/Cas9. **2014**, 3, 42-9		83

1489	Genome editing using Cas9 nickases. **2014**, 546, 161-74		53
1488	Mouse Genome Editing Using the CRISPR/Cas System. **2014**, 83, 15.7.1-27		65
1487	The Family Corynebacteriaceae. **2014**, 239-277		5
1486	Protein engineering of Cas9 for enhanced function. **2014**, 546, 491-511		17
1485	Tissue-specific genome editing in Ciona embryos by CRISPR/Cas9. **2014**, 141, 4115-20		90
1484	Genetic characterization of antiplasmid immunity through a type III-A CRISPR-Cas system. **2014**, 196, 310-7		116
1483	Characterization of genomic deletion efficiency mediated by clustered regularly interspaced short palindromic repeats (CRISPR)/Cas9 nuclease system in mammalian cells. **2014**, 289, 21312-24		236
1482	Yeast synthetic biology for the production of recombinant therapeutic proteins. **2015**, 15, 1-16		55
1481	Microbiology: Bacteria get vaccinated. **2014**, 513, 175-6		2
1480	Cellular reprogramming by transcription factor engineering. **2014**, 28, 1-9		6
1479	Biopharmaceutical protein production bySaccharomyces cerevisiae: current state and future prospects. **2014**, 2, 167-182		27
1478	Structural model of a CRISPR RNA-silencing complex reveals the RNA-target cleavage activity in Cmr4. **2014**, 56, 43-54		112
1477	Genomics and Proteomics Provide New Insight into the Commensal and Pathogenic Lifestyles of Bovine- and Human-Associated Staphylococcus epidermidis Strains. **2014**, 13, 3748-3762		14
1476	Bacteriophage-based synthetic biology for the study of infectious diseases. **2014**, 19, 59-69		48
1475	A highly abundant bacteriophage discovered in the unknown sequences of human faecal metagenomes. **2014**, 5, 4498		420
1474	Crystal structure of the RNA-guided immune surveillance Cascade complex in Escherichia coli. **2014**, 515, 147-50		130
1473	Targeted gene knockout in chickens mediated by TALENs. **2014**, 111, 12716-21		113
1472	Structural biology. Crystal structure of a CRISPR RNA-guided surveillance complex bound to a ssDNA target. *Science*, **2014**, 345, 1479-84	33.3	174

1471	Structures of CRISPR Cas3 offer mechanistic insights into Cascade-activated DNA unwinding and degradation. **2014**, 21, 771-7		119
1470	Harnessing CRISPR-Cas9 immunity for genetic engineering. **2014**, 19, 114-119		52
1469	Genomic encyclopedia of type strains of the genus Bifidobacterium. **2014**, 80, 6290-302		162
1468	Small RNAs: a new paradigm in plant-microbe interactions. **2014**, 52, 495-516		133
1467	Short communication: Determination of Salmonella clustered regularly interspaced short palindromic repeats (CRISPR) diversity on dairy farms in Wisconsin and Minnesota. **2014**, 97, 6370-7		5
1466	Comparative genomics highlights the unique biology of Methanomassiliicoccales, a Thermoplasmatales-related seventh order of methanogenic archaea that encodes pyrrolysine. **2014**, 15, 679		191
1465	Conservation of streptococcal CRISPRs on human skin and saliva. **2014**, 14, 146		15
1464	Human oral viruses are personal, persistent and gender-consistent. **2014**, 8, 1753-67		107
1463	Rational design of highly active sgRNAs for CRISPR-Cas9-mediated gene inactivation. **2014**, 32, 1262-7		1000
1462	Sequence-specific antimicrobials using efficiently delivered RNA-guided nucleases. **2014**, 32, 1141-5		423
1461	CRISPR-Cas9 knockin mice for genome editing and cancer modeling. **2014**, 159, 440-55		1089
1460	Programmable RNA recognition and cleavage by CRISPR/Cas9. **2014**, 516, 263-6		417
1459	Adaptation in bacterial CRISPR-Cas immunity can be driven by defective phages. **2014**, 5, 4399		93
1458	A simplified and efficient germline-specific CRISPR/Cas9 system for Drosophila genomic engineering. **2014**, 8, 52-7		81
1457	CRISPR/Cas9 and TALEN-mediated knock-in approaches in zebrafish. **2014**, 69, 142-50		130
1456	RNAi for silencing drug resistance in microbes toward development of nanoantibiotics. **2014**, 189, 150-7		10
1455	Genomic and metabolic comparison with Dickeya dadantii 3937 reveals the emerging Dickeya solani potato pathogen to display distinctive metabolic activities and T5SS/T6SS-related toxin repertoire. **2014**, 15, 283		27
1454	Quantum gases. Observation of Fermi surface deformation in a dipolar quantum gas. *Science*, **2014**, 345, 1484-7	33.3	68

1453	Degenerate target sites mediate rapid primed CRISPR adaptation. **2014**, 111, E1629-38	199
1452	Abundant and diverse clustered regularly interspaced short palindromic repeat spacers in Clostridium difficile strains and prophages target multiple phage types within this pathogen. **2014**, 5, e01045-13	52
1451	A CRISPR view of development. **2014**, 28, 1859-72	174
1450	Whole genome sequencing reveals a novel CRISPR system in industrial Clostridium acetobutylicum. **2014**, 41, 1677-85	7
1449	Cas1-Cas2 complex formation mediates spacer acquisition during CRISPR-Cas adaptive immunity. **2014**, 21, 528-34	294
1448	Prokaryotic ancestry of eukaryotic protein networks mediating innate immunity and apoptosis. **2014**, 426, 1568-82	15
1447	Disrupting the male germ line to find infertility and contraception targets. **2014**, 75, 101-8	11
1446	The double-edged sword of Lamarck: comment on "Diversity, evolution, and therapeutic applications of small RNAs in prokaryotic and eukaryotic immune systems" by Edwin L. Cooper and Nicola Overstreet. **2014**, 11, 141-3; discussion 149-51	5
1445	CRISPR/Cas9 mediated genome engineering in Drosophila. **2014**, 69, 128-36	88
1444	CRISPR/Cas9 and genome editing in Drosophila. **2014**, 41, 7-19	144
1443	Geographical diversity of Streptococcus thermophilus phages in Chinese yoghurt plants. **2014**, 35, 32-37	7
1442	Direct observation of R-loop formation by single RNA-guided Cas9 and Cascade effector complexes. **2014**, 111, 9798-803	293
1441	Artificial transcription factor-mediated regulation of gene expression. **2014**, 225, 58-67	16
1440	Development and applications of CRISPR-Cas9 for genome engineering. **2014**, 157, 1262-1278	3595
1439	New clustered regularly interspaced short palindromic repeat locus spacer pair typing method based on the newly incorporated spacer for Salmonella enterica. **2014**, 52, 2955-62	17
1438	Unravelling the structural and mechanistic basis of CRISPR-Cas systems. **2014**, 12, 479-92	476
1437	Isolation of Streptococcus thermophilus in Different Dairy Products and Analysision on CRISPR Sequences. **2014**, 933, 170-174	
1436	Genomic and comparative genomic analyses of Rickettsia heilongjiangensis provide insight into its evolution and pathogenesis. **2014**, 26, 274-82	4

1435	Comparative genomic analysis provides insights into the evolution and niche adaptation of marine Magnetospira sp. QH-2 strain. **2014**, 16, 525-44	37
1434	Bacteriophages in Industrial Food Processing: Incidence and Control in Industrial Fermentation. **2014**, 199-216	1
1433	CRISPR-Cas systems: new players in gene regulation and bacterial physiology. **2014**, 4, 37	52
1432	Protection against Foreign DNA. **2014**, 333-348	2
1431	Molecular Genetics of Mycobacteriophages. **2014**, 2,	45
1430	Functions and Applications of RNA-Guided CRISPR-Cas Immune Systems. **2014**, 1-24	
1429	AbpA and AbpB provide anti-phage activity in Escherichia coli. **2014**, 89, 51-60	1
1428	Tailor-Made Starter Cultures for Preserving the Uniqueness of Traditional Cheeses. **2014**, 34-53	
1427	Microbiology of Raw Milk. **2014**, 15-52	
1426	References. 301-333	
1425	Genome sequence and emended description of Leisingera nanhaiensis strain DSM 24252(T) isolated from marine sediment. **2014**, 9, 687-703	5
1424	Functional genomics of lactic acid bacteria: from food to health. **2014**, 13 Suppl 1, S8	103
1423	The Clostridium difficile cell wall protein CwpV confers phase-variable phage resistance. **2015**, 98, 329-42	30
1422	Connecting genotypes, phenotypes and fitness: harnessing the power of CRISPR/Cas9 genome editing. **2015**, 24, 3810-22	38
1421	Lactic Acid Bacteria and the Human Intestinal Microbiome. **2015**, 120-133	
1420	CRISPR/Cas9-mediated genome engineering of CHO cell factories: Application and perspectives. **2015**, 10, 979-94	82
1419	CRISPR-Based Technologies and the Future of Food Science. **2015**, 80, R2367-72	34
1418	Bacteriophages of Lactic Acid Bacteria and Biotechnological Tools. **2015**, 100-119	1

1417	Lactic Acid Bacteria for Dairy Fermentations. **2015**, 191-208	2
1416	Genomic Evolution of Lactic Acid Bacteria. **2015**, 32-54	4
1415	CRISPR-Cas9: how research on a bacterial RNA-guided mechanism opened new perspectives in biotechnology and biomedicine. **2015**, 7, 363-5	25
1414	DIY Guide to Creating GMO Sapiens. **2015**, 137-162	
1413	The role of Cas8 in type I CRISPR interference. **2015**, 35,	30
1412	References and Bibliography. **2015**, 713-772	
1411	The CRISPR-Cas Immune System and Genetic Transfers: Reaching an Equilibrium. **2015**, 3, PLAS-0034-2014	16
1410	Neurogenethics: An emerging discipline at the intersection of ethics, neuroscience, and genomics. **2015**, 5, 18-22	10
1409	Complete genome sequence of the thermophilic Thermus sp. CCB_US3_UF1 from a hot spring in Malaysia. **2015**, 10, 76	6
1408	CRISPR-Cas: From the Bacterial Adaptive Immune System to a Versatile Tool for Genome Engineering. **2015**, 54, 13508-14	17
1407	Genome Editing Gene Therapy for Duchenne Muscular Dystrophy. **2015**, 2, 343-355	9
1406	Crystal Structure of the CRISPR-Cas RNA Silencing Cmr Complex Bound to a Target Analog. **2015**, 57, 317-323	
1405	I can see CRISPR now, even when phage are gone: a view on alternative CRISPR-Cas functions from the prokaryotic envelope. **2015**, 28, 267-74	34
1404	CRISPR-Cas: von einem bakteriellen adaptiven Immunsystem zu einem vielseitigen Werkzeug f die Gentechnik. **2015**, 127, 13710-13716	4
1403	Functional knockout of FUT8 in Chinese hamster ovary cells using CRISPR/Cas9 to produce a defucosylated antibody. **2015**, 15, 660-666	25
1402	2 Microbial evolution: the view from the acidophiles.	
1401	. **2015**,	2
1400	CRISPR/Cas9 Genome Editing System in Drosophila. **2015**, s1,	1

1399	The Use of Innovative Tools to Reproduce Human Cancer Translocations: Lessons from the CRISPR/Cas System. **2015**, 3, 273-278	
1398	From Gene Targeting to Genome Editing: Transgenic animals applications and beyond. **2015**, 87, 1323-48	32
1397	Applications of Engineered DNA-Binding Molecules Such as TAL Proteins and the CRISPR/Cas System in Biology Research. **2015**, 16, 23143-64	10
1396	Multiplexed CRISPR/Cas9 genome editing increases the efficacy of homologous-dependent repair of donor sequences in mammalian cells. **2015**, 111,	
1395	Modeling Viral Infectious Diseases and Development of Antiviral Therapies Using Human Induced Pluripotent Stem Cell-Derived Systems. **2015**, 7, 3835-56	23
1394	Full Genome Sequence Analysis of Two Isolates Reveals a Novel Xanthomonas Species Close to the Sugarcane Pathogen Xanthomonas albilineans. **2015**, 6, 714-33	12
1393	Application of CRISPR/Cas9 Technology to HBV. **2015**, 16, 26077-86	25
1392	Induced Pluripotency and Gene Editing in Disease Modelling: Perspectives and Challenges. **2015**, 16, 28614-34	17
1391	"Altiarchaeales": uncultivated archaea from the subsurface. **2015**, 5, 1381-95	24
1390	Analysis of the type II-A CRISPR-Cas system of Streptococcus agalactiae reveals distinctive features according to genetic lineages. **2015**, 6, 214	33
1389	A new age in functional genomics using CRISPR/Cas9 in arrayed library screening. **2015**, 6, 300	69
1388	Comparative genomics reveals diversified CRISPR-Cas systems of globally distributed Microcystis aeruginosa, a freshwater bloom-forming cyanobacterium. **2015**, 6, 394	29
1387	CRISPR Diversity in E. coli Isolates from Australian Animals, Humans and Environmental Waters. **2015**, 10, e0124090	8
1386	Regulated CRISPR Modules Exploit a Dual Defense Strategy of Restriction and Abortive Infection in a Model of Prokaryote-Phage Coevolution. **2015**, 11, e1004603	10
1385	Identification of Candidate Adherent-Invasive E. coli Signature Transcripts by Genomic/Transcriptomic Analysis. **2015**, 10, e0130902	17
1384	CRISPR Content Correlates with the Pathogenic Potential of Escherichia coli. **2015**, 10, e0131935	28
1383	Genome Wide Re-Annotation of Caldicellulosiruptor saccharolyticus with New Insights into Genes Involved in Biomass Degradation and Hydrogen Production. **2015**, 10, e0133183	8
1382	Occurrence and Diversity of CRISPR-Cas Systems in the Genus Bifidobacterium. **2015**, 10, e0133661	53

1381	VapD in Xylella fastidiosa Is a Thermostable Protein with Ribonuclease Activity. **2015**, 10, e0145765		6
1380	CRISPR/Cas system: Novel roles for Evolution and Survival of Bacterial Pathogens and Application for Genome Editing. **2015**, 26, 14-21		
1379	Targeting Non-Coding RNAs in Plants with the CRISPR-Cas Technology is a Challenge yet Worth Accepting. **2015**, 6, 1001		31
1378	. **2015**,		10
1377	Regulation of the Type I-F CRISPR-Cas system by CRP-cAMP and GalM controls spacer acquisition and interference. **2015**, 43, 6038-48		43
1376	Core Concept: CRISPR gene editing. **2015**, 112, 6245-6		12
1375	Small RNAs, 5' UTR elements and RNA-binding proteins in intracellular bacteria: impact on metabolism and virulence. **2015**, 39, 331-49		81
1374	Expanding the Biologist's Toolkit with CRISPR-Cas9. **2015**, 58, 568-74		311
1373	Targeted Gene Mutation in Plants. **2015**, 253-272		4
1372	A CRISPR View of Cleavage. **2015**, 161, 964-966		3
1371	Structural biology. Structures of the CRISPR-Cmr complex reveal mode of RNA target positioning. *Science*, **2015**, 348, 581-5	33.3	94
1370	CRISPR immunity drives rapid phage genome evolution in Streptococcus thermophilus. **2015**, 6,		119
1369	Somatic Genome Manipulation. **2015**,		1
1368	Targeted DNA degradation using a CRISPR device stably carried in the host genome. **2015**, 6, 6989		83
1367	Choosing the Right Tool for the Job: RNAi, TALEN, or CRISPR. **2015**, 58, 575-85		269
1366	Genome Engineering in Cyanobacteria: Where We Are and Where We Need To Go. **2015**, 4, 1186-96		48
1365	When Competing Viruses Unify: Evolution, Conservation, and Plasticity of Genetic Identities. **2015**, 80, 305-18		21
1364	Challenges in CRISPR/CAS9 Delivery: Potential Roles of Nonviral Vectors. **2015**, 26, 452-62		133

1363	Bacteriophage and their potential roles in the human oral cavity. **2015**, 7, 27423	65
1362	Lung Stem Cells in the Epithelium and Vasculature. **2015**,	
1361	Structure Principles of CRISPR-Cas Surveillance and Effector Complexes. **2015**, 44, 229-55	19
1360	In Vitro Reconstitution and Crystallization of Cas9 Endonuclease Bound to a Guide RNA and a DNA Target. **2015**, 558, 515-537	19
1359	Directional R-Loop Formation by the CRISPR-Cas Surveillance Complex Cascade Provides Efficient Off-Target Site Rejection. **2015**, 10, 1534-1543	114
1358	A Toolkit of CRISPR-Based Genome Editing Systems in Drosophila. **2015**, 42, 141-9	32
1357	Structural insights into specific crRNA G-rich sequence binding by Meiothermus ruber Cse2. **2015**, 190, 122-34	
1356	Secondary structure-based analysis of mouse brain small RNA sequences obtained by using next-generation sequencing. **2015**, 106, 122-8	3
1355	Comparative genome analysis of rice-pathogenic Burkholderia provides insight into capacity to adapt to different environments and hosts. **2015**, 16, 349	32
1354	Biogenesis pathways of RNA guides in archaeal and bacterial CRISPR-Cas adaptive immunity. **2015**, 39, 428-41	160
1353	Heritable CRISPR/Cas9-mediated genome editing in the yellow fever mosquito, Aedes aegypti. **2015**, 10, e0122353	78
1352	CRISPR-Cas Adaptive Immune Systems of the Sulfolobales: Unravelling Their Complexity and Diversity. **2015**, 5, 783-817	35
1351	The casposon-encoded Cas1 protein from Aciduliprofundum boonei is a DNA integrase that generates target site duplications. **2015**, 43, 10576-87	39
1350	Foreign DNA acquisition by the I-F´CRISPR-Cas system requires all components of the interference machinery. **2015**, 43, 10848-60	62
1349	What history tells us XXXIX. CRISPR-Cas: From a prokaryotic immune system to a universal genome editing tool. **2015**, 40, 829-32	11
1348	As Clear as Mud? Determining the Diversity and Prevalence of Prophages in the Draft Genomes of Estuarine Isolates of Clostridium difficile. **2015**, 7, 1842-55	14
1347	Different genome stability proteins underpin primed and naïve adaptation in E. coli CRISPR-Cas immunity. **2015**, 43, 10821-30	65
1346	The Cas6e ribonuclease is not required for interference and adaptation by the E. coli type I-E CRISPR-Cas system. **2015**, 43, 6049-61	16

1345	Covalent Modification of Bacteriophage T4 DNA Inhibits CRISPR-Cas9. **2015**, 6, e00648	58
1344	Rapid characterization of CRISPR-Cas9 protospacer adjacent motif sequence elements. **2015**, 16, 253	126
1343	CRISPR/Cas9 system as an innovative genetic engineering tool: Enhancements in sequence specificity and delivery methods. **2015**, 1856, 234-43	15
1342	Functional signatures of oral dysbiosis during periodontitis progression revealed by microbial metatranscriptome analysis. **2015**, 7, 27	175
1341	WU-CRISPR: characteristics of functional guide RNAs for the CRISPR/Cas9 system. **2015**, 16, 218	182
1340	Phylogenetic Distribution of CRISPR-Cas Systems in Antibiotic-Resistant Pseudomonas´aeruginosa. **2015**, 6, e01796-15	128
1339	CRISPR sabotage. **2015**, 16, 248	2
1338	lncRNAs in Stress Response. **2016**, 394, 203-36	17
1337	A quick guide to CRISPR sgRNA design tools. **2015**, 6, 266-76	62
1336	Large scale multi-species palindrome study using distributed in-memory computing. **2015**,	1
1335	VEGF Signaling: Methods and Protocols. Preface. **2015**, 1332, v-vi	3
1334	Engineered Mammalian RNAi Can Elicit Antiviral Protection that Negates the Requirement for the Interferon Response. **2015**, 13, 1456-1466	29
1333	Microbial CRISPR□as System: From Bacterial Immunity to Next-Generation Antimicrobials. **2015**, 217-234	
1332	Microbial Factories. **2015**,	1
1331	A principle of organization which facilitates broad Lamarckian-like adaptations by improvisation. **2015**, 10, 68	27
1330	Genome Editing and Its Applications in Model Organisms. **2015**, 13, 336-44	38
1329	CRISPR-Cas9 genome editing of a single regulatory element nearly abolishes target gene expression in mice--brief report. **2015**, 35, 312-5	39
1328	Cas9 function and host genome sampling in Type II-A CRISPR-Cas adaptation. **2015**, 29, 356-61	150

1327	Genome Editing in Stem Cells. **2015**, 1, 31-38	1
1326	Functional genomic screening approaches in mechanistic toxicology and potential future applications of CRISPR-Cas9. **2015**, 764, 31-42	14
1325	Therapeutic genome editing: prospects and challenges. **2015**, 21, 121-31	809
1324	Sequences spanning the leader-repeat junction mediate CRISPR adaptation to phage in Streptococcus thermophilus. **2015**, 43, 1749-58	77
1323	Cas9 specifies functional viral targets during CRISPR-Cas adaptation. **2015**, 519, 199-202	247
1322	Integrase-mediated spacer acquisition during CRISPR-Cas adaptive immunity. **2015**, 519, 193-8	231
1321	Microbiology: How bacteria get spacers from invaders. **2015**, 519, 166-7	5
1320	Harnessing CRISPR-Cas systems for bacterial genome editing. **2015**, 23, 225-32	125
1319	Transcriptional regulator-mediated activation of adaptation genes triggers CRISPR de novo spacer acquisition. **2015**, 43, 1044-55	45
1318	Small molecules enhance CRISPR genome editing in pluripotent stem cells. **2015**, 16, 142-7	303
1317	Marine Sponge Metagenomics. **2015**, 457-473	0
1316	Exogenous enzymes upgrade transgenesis and genetic engineering of farm animals. **2015**, 72, 1907-29	25
1315	Crystal structure of the Csm3-Csm4 subcomplex in the type III-A CRISPR-Cas interference complex. **2015**, 427, 259-73	14
1314	The impact of CRISPR-Cas9 on target identification and validation. **2015**, 20, 450-7	49
1313	The roles of CRISPR-Cas systems in adaptive immunity and beyond. **2015**, 32, 36-41	132
1312	Using engineered endonucleases to create knockout and knockin zebrafish models. **2015**, 1239, 291-305	21
1311	The formation of Streptococcus mutans persisters induced by the quorum-sensing peptide pheromone is affected by the LexA regulator. **2015**, 197, 1083-94	28
1310	Gene silencing by CRISPR interference in mycobacteria. **2015**, 6, 6267	146

1309	Genome editing strategies: potential tools for eradicating HIV-1/AIDS. **2015**, 21, 310-21	33
1308	No evidence of inhibition of horizontal gene transfer by CRISPR-Cas on evolutionary timescales. **2015**, 9, 2021-7	71
1307	The structural biology of CRISPR-Cas systems. **2015**, 30, 100-111	100
1306	CRISPR craze conquers the RNA world: precise manipulation of DNA and RNA based on a bacterial defense system. **2015**, 54, 4710-2	5
1305	Development of a real-time PCR assay for the quantification of Ma-LMM01-type Microcystis cyanophages in a natural pond. **2015**, 60, 400-8	8
1304	Generation of a CRISPR database for Yersinia pseudotuberculosis complex and role of CRISPR-based immunity in conjugation. **2015**, 17, 4306-21	19
1303	Genetic screens and functional genomics using CRISPR/Cas9 technology. **2015**, 282, 1383-93	56
1302	Structure and function of the bacterial root microbiota in wild and domesticated barley. **2015**, 17, 392-403	663
1301	One-step high-efficiency CRISPR/Cas9-mediated genome editing in Streptomyces. **2015**, 47, 231-43	193
1300	Genome-wide CRISPR screen in a mouse model of tumor growth and metastasis. **2015**, 160, 1246-60	544
1299	An archaeal CRISPR type III-B system exhibiting distinctive RNA targeting features and mediating dual RNA and DNA interference. **2015**, 43, 406-17	120
1298	Climate change: Black carbon and atmospheric feedbacks. **2015**, 519, 167-8	43
1297	CRISPR-based screening of genomic island excision events in bacteria. **2015**, 112, 8076-81	84
1296	Clustered Regularly Interspaced Short Palindromic Repeat-Dependent, Biofilm-Specific Death of Pseudomonas aeruginosa Mediated by Increased Expression of Phage-Related Genes. **2015**, 6, e00129-15	38
1295	Engineering reprogrammable RNA-binding proteins for study and manipulation of the transcriptome. **2015**, 11, 2658-65	14
1294	Subtyping of the Legionella pneumophila "Ulm" outbreak strain using the CRISPR-Cas system. **2015**, 305, 828-37	9
1293	The evolution of bacterial resistance against bacteriophages in the horse chestnut phyllosphere is general across both space and time. **2015**, 370,	31
1292	SOD2 targeted gene editing by CRISPR/Cas9 yields Human cells devoid of MnSOD. **2015**, 89, 379-86	22

1291	Costs of CRISPR-Cas-mediated resistance in Streptococcus thermophilus. **2015**, 282, 20151270	68
1290	Application of CRISPR/Cas9 for biomedical discoveries. **2015**, 5, 33	41
1289	Escherichia coli O157:H7 bacteriophage Φ241 isolated from an industrial cucumber fermentation at high acidity and salinity. **2015**, 6, 67	19
1288	Engineered Minichromosomes in Plants: Structure, Function, and Applications. **2015**, 318, 63-119	4
1287	Functional Analysis of Porphyromonas gingivalis W83 CRISPR-Cas Systems. **2015**, 197, 2631-41	14
1286	Archaeal viruses multiply: temporal screening in a solar saltern. **2015**, 7, 1902-26	23
1285	The Hope for iPSC in Lung Stem Cell Therapy and Disease Modeling. **2015**, 113-143	0
1284	Analysis of the features of 45 identified CRISPR loci in 32 Staphylococcus aureus. **2015**, 464, 894-900	17
1283	CRISPR-Cas: New Tools for Genetic Manipulations from Bacterial Immunity Systems. **2015**, 69, 209-28	125
1282	An inducible lentiviral guide RNA platform enables the identification of tumor-essential genes and tumor-promoting mutations in vivo. **2015**, 10, 1422-32	233
1281	Third Report on Chicken Genes and Chromosomes 2015. **2015**, 145, 78-179	57
1280	Analysis of protein-RNA interactions in CRISPR proteins and effector complexes by UV-induced cross-linking and mass spectrometry. **2015**, 89, 138-48	19
1279	The Bacterial Origins of the CRISPR Genome-Editing Revolution. **2015**, 26, 413-24	56
1278	Delivery and Specificity of CRISPR-Cas9 Genome Editing Technologies for Human Gene Therapy. **2015**, 26, 443-51	130
1277	Targeted gene editing by transfection of in vitro reconstituted Streptococcus thermophilus Cas9 nuclease complex. **2015**, 12, 1-4	18
1276	What history tells us XXXVII. CRISPR-Cas: The discovery of an immune system in prokaryotes. **2015**, 40, 221-3	23
1275	Efficient Genome Editing in Clostridium cellulolyticum via CRISPR-Cas9 Nickase. **2015**, 81, 4423-31	154
1274	Three CRISPR-Cas immune effector complexes coexist in Pyrococcus furiosus. **2015**, 21, 1147-58	33

1273	Cas9-mediated targeting of viral RNA in eukaryotic cells. **2015**, 112, 6164-9		182
1272	Virus-induced dormancy in the archaeon Sulfolobus islandicus. **2015**, 6,		38
1271	Retrotransposons. An RNA polymerase III subunit determines sites of retrotransposon integration. *Science*, **2015**, 348, 585-8	33.3	45
1270	CRISPR-Cas9 Based Genome Engineering: Opportunities in Agri-Food-Nutrition and Healthcare. **2015**, 19, 261-75		8
1269	A short splice form of Xin-actin binding repeat containing 2 (XIRP2) lacking the Xin repeats is required for maintenance of stereocilia morphology and hearing function. **2015**, 35, 1999-2014		32
1268	Complete Genome Sequence of Bifidobacterium longum GT15: Identification and Characterization of Unique and Global Regulatory Genes. **2015**, 70, 819-34		15
1267	Comparative Genome Analysis of Lactobacillus casei: Insights into Genomic Diversification for Niche Expansion. **2015**, 55, 102-107		11
1266	Methods for studying the zebrafish brain: past, present and future. **2015**, 42, 1746-63		39
1265	Circadian rhythms: to sync or not to sync. **2015**, 25, R337-9		5
1264	Evolution: Parasite Pressure Favors Fortress-like Defence. **2015**, 25, R335-7		1
1263	Parasite Exposure Drives Selective Evolution of Constitutive versus Inducible Defense. **2015**, 25, 1043-9		166
1262	The CRISPR/Cas9 system inactivates latent HIV-1 proviral DNA. **2015**, 12, 22		156
1261	RNA-guided CRISPR-Cas technologies for genome-scale investigation of disease processes. **2015**, 8, 31		7
1260	"Off-Spotter": very fast and exhaustive enumeration of genomic lookalikes for designing CRISPR/Cas guide RNAs. **2015**, 10, 4		67
1259	Synthetic epigenetics-towards intelligent control of epigenetic states and cell identity. **2015**, 7, 18		47
1258	Linking environmental prokaryotic viruses and their host through CRISPRs. **2015**, 91,		17
1257	CRISPR. **2015**,		9
1256	Applications of CRISPR-Cas9 mediated genome engineering. **2015**, 2, 11		24

1255	The use of lineage tracing to study kidney injury and regeneration. **2015**, 11, 420-31	42
1254	Temperate and lytic bacteriophages programmed to sensitize and kill antibiotic-resistant bacteria. **2015**, 112, 7267-72	267
1253	Clustured regularly interspersed short palindromic repeats (CRISPR) genetic diversity studies as a mean to reconstruct the evolution of the Mycobacterium tuberculosis complex. **2015**, 95 Suppl 1, S159-66	6
1252	Crystal structure of the Csm1 subunit of the Csm complex and its single-stranded DNA-specific nuclease activity. **2015**, 23, 782-90	51
1251	Generation of a Knockout Mouse Embryonic Stem Cell Line Using a Paired CRISPR/Cas9 Genome Engineering Tool. **2016**, 1341, 321-43	17
1250	The history and market impact of CRISPR RNA-guided nucleases. **2015**, 12, 85-90	26
1249	Efficient CRISPR-Cas9-mediated generation of knockin human pluripotent stem cells lacking undesired mutations at the targeted locus. **2015**, 11, 875-883	111
1248	DNA and RNA interference mechanisms by CRISPR-Cas surveillance complexes. **2015**, 39, 442-63	81
1247	The pros and cons of vertebrate animal models for functional and therapeutic research on inherited retinal dystrophies. **2015**, 48, 137-59	65
1246	CRISPR/Cas9: a molecular Swiss army knife for simultaneous introduction of multiple genetic modifications in Saccharomyces cerevisiae. **2015**, 15,	264
1245	Co-transcriptional DNA and RNA Cleavage during Type III CRISPR-Cas Immunity. **2015**, 161, 1164-1174	276
1244	Diversity of CRISPR loci and virulence genes in pathogenic Escherichia coli isolates from various sources. **2015**, 204, 41-6	11
1243	Application of CRISPRi for prokaryotic metabolic engineering involving multiple genes, a case study: Controllable P(3HB-co-4HB) biosynthesis. **2015**, 29, 160-168	178
1242	Advances in CRISPR-Cas9 genome engineering: lessons learned from RNA interference. **2015**, 43, 3407-19	104
1241	Application of CRISPR/Cas9 genome editing to the study and treatment of disease. **2015**, 89, 1023-34	38
1240	CRISPR-Cas9 Based Engineering of Actinomycetal Genomes. **2015**, 4, 1020-9	279
1239	In vivo genome editing using Staphylococcus aureus Cas9. **2015**, 520, 186-91	1700
1238	Efficient inversions and duplications of mammalian regulatory DNA elements and gene clusters by CRISPR/Cas9. **2015**, 7, 284-98	89

1237	The cost of phage resistance in a plant pathogenic bacterium is context-dependent. **2015**, 69, 1321-8	36
1236	The CRISPR-Cas immune system: biology, mechanisms and applications. **2015**, 117, 119-28	253
1235	Enabling functional genomics with genome engineering. **2015**, 25, 1442-55	67
1234	Turning point: Martin Jinek. **2015**, 525, 415-415	
1233	An updated evolutionary classification of CRISPR-Cas systems. **2015**, 13, 722-36	1434
1232	Interference activity of a minimal Type I CRISPR-Cas system from Shewanella putrefaciens. **2015**, 43, 8913-23	18
1231	CRISPR-Cas immunity in prokaryotes. **2015**, 526, 55-61	470
1230	Purification, crystallization, crystallographic analysis and phasing of the CRISPR-associated protein Csm2 from Thermotoga maritima. **2015**, 71, 1223-7	1
1229	Structure and specificity of the RNA-guided endonuclease Cas9 during DNA interrogation, target binding and cleavage. **2015**, 43, 8924-41	72
1228	Multiple mechanisms for CRISPR-Cas inhibition by anti-CRISPR proteins. **2015**, 526, 136-9	225
1227	Using the CRISPR-Cas System to Positively Select Mutants in Genes Essential for Its Function. **2015**, 1311, 233-50	
1226	Cas3 nuclease-helicase activity assays. **2015**, 1311, 277-91	4
1225	Analysis of CRISPR Pre-crRNA Cleavage. **2015**, 1311, 35-46	1
1224	Annotation and Classification of CRISPR-Cas Systems. **2015**, 1311, 47-75	168
1223	Computational Detection of CRISPR/crRNA Targets. **2015**, 1311, 77-89	5
1222	Analysis of crRNA Using Liquid Chromatography Electrospray Ionization Mass Spectrometry (LC ESI MS). **2015**, 1311, 133-45	2
1221	Cpf1 is a single RNA-guided endonuclease of a class 2 CRISPR-Cas system. **2015**, 163, 759-71	2414
1220	DNA targeting by the type I-G and type I-A CRISPR-Cas systems of Pyrococcus furiosus. **2015**, 43, 10353-63	31

1219	Das CRISPR-Fieber erobert die RNA-Welt: Ein bakterielles Verteidigungssystem ermöglicht die präzise Manipulation von DNA und RNA. **2015**, 127, 4792-4794	2
1218	The art of CHO cell engineering: A comprehensive retrospect and future perspectives. **2015**, 33, 1878-96	169
1217	CRISPR/Cas9-mediated mutagenesis in the sea lamprey Petromyzon marinus: a powerful tool for understanding ancestral gene functions in vertebrates. **2015**, 142, 4180-7	45
1216	Combining CRISPR/Cas9 and rAAV Templates for Efficient Gene Editing. **2015**, 25, 287-96	19
1215	Global transcription of CRISPR loci in the human oral cavity. **2015**, 16, 401	11
1214	Protein Phosphorylation: A Major Switch Mechanism for Metabolic Regulation. **2015**, 26, 676-687	249
1213	Transformation and T-DNA Mutagenesis. **2015**, 147-153	1
1212	Foreign DNA capture during CRISPR-Cas adaptive immunity. **2015**, 527, 535-8	130
1211	Early Vertebrate Evolution of the Host Restriction Factor Tetherin. **2015**, 89, 12154-65	20
1210	DNase H Activity of Neisseria meningitidis Cas9. **2015**, 60, 242-55	45
1209	Discovery and Functional Characterization of Diverse Class 2 CRISPR-Cas Systems. **2015**, 60, 385-97	670
1208	Nitrincola nitratireducens sp. nov. isolated from a haloalkaline crater lake. **2015**, 38, 555-62	7
1207	Resistance and tolerance to foreign elements by prokaryotic immune systems - curating the genome. **2015**, 15, 717-24	24
1206	CRISPR/Cas9: molecular tool for gene therapy to target genome and epigenome in the treatment of lung cancer. **2015**, 22, 509-17	33
1205	Draft Genome Sequence of the Entomopathogenic Bacterium Bacillus pumilus 15.1, a Strain Highly Toxic to the Mediterranean Fruit Fly Ceratitis capitata. **2015**, 3,	1
1204	Genomes by design. **2015**, 16, 501-16	39
1203	Barley: a translational model for adaptation to climate change. **2015**, 206, 913-931	138
1202	Structural and Mechanistic Basis of PAM-Dependent Spacer Acquisition in CRISPR-Cas Systems. **2015**, 163, 840-53	171

1201	Expanding the biotechnology potential of lactobacilli through comparative genomics of 213 strains and associated genera. **2015**, 6, 8322	300
1200	Targeted Large-Scale Deletion of Bacterial Genomes Using CRISPR-Nickases. **2015**, 4, 1217-25	66
1199	CRISPRs provide broad and robust protection to oral microbial flora of gingival health against bacteriophage challenge. **2015**, 6, 541-545	13
1198	Bacterial danger sensing. **2015**, 427, 3744-53	37
1197	Targeted Mutagenesis, Precise Gene Editing, and Site-Specific Gene Insertion in Maize Using Cas9 and Guide RNA. **2015**, 169, 931-45	464
1196	Transcriptomic analysis of Thermoanaerobacter tengcongensis grown at different temperatures by RNA sequencing. **2015**, 42, 335-8	1
1195	Crystal Structure of Staphylococcus aureus Cas9. **2015**, 162, 1113-26	257
1194	Polymorphism of CRISPR shows separated natural groupings of Shigella subtypes and evidence of horizontal transfer of CRISPR. **2015**, 12, 1109-20	10
1193	Cas9-Guide RNA Directed Genome Editing in Soybean. **2015**, 169, 960-70	316
1192	Controlling mRNA stability and translation with the CRISPR endoribonuclease Csy4. **2015**, 21, 1921-30	17
1191	Procedures for Generating CRISPR Mutants with Novel Spacers Acquired from Viruses or Plasmids. **2015**, 1311, 195-222	1
1190	Differential Distribution of Type II CRISPR-Cas Systems in Agricultural and Nonagricultural Campylobacter coli and Campylobacter jejuni Isolates Correlates with Lack of Shared Environments. **2015**, 7, 2663-79	26
1189	Identification and characterization of episomal forms of integrative genomic islands in the genus Francisella. **2015**, 305, 874-80	2
1188	Primary processing of CRISPR RNA by the endonuclease Cas6 in Staphylococcus epidermidis. **2015**, 589, 3197-204	10
1187	Generation of Targeted Mutations in Zebrafish Using the CRISPR/Cas System. **2015**, 1332, 205-17	25
1186	Ruminal Viruses (Bacteriophages, Archaeaphages). **2015**, 121-141	6
1185	Regulatory RNA-assisted genome engineering in microorganisms. **2015**, 36, 85-90	16
1184	Cas9-Assisted Targeting of CHromosome segments CATCH enables one-step targeted cloning of large gene clusters. **2015**, 6, 8101	145

1183	piRNAs derived from ancient viral processed pseudogenes as transgenerational sequence-specific immune memory in mammals. **2015**, 21, 1691-703	47
1182	Targeted Transcriptional Repression in Bacteria Using CRISPR Interference (CRISPRi). **2015**, 1311, 349-62	37
1181	Diversity of CRISPR-Cas immune systems and molecular machines. **2015**, 16, 247	61
1180	Functional genomics to uncover drug mechanism of action. **2015**, 11, 942-8	58
1179	Bioart. **2015**, 33, 724-734	17
1178	Synthetic CRISPR RNA-Cas9-guided genome editing in human cells. **2015**, 112, E7110-7	120
1177	A century of the phage: past, present and future. **2015**, 13, 777-86	307
1176	Insights from genomes of representatives of the human gut commensal Bifidobacterium bifidum. **2015**, 17, 2515-31	61
1175	Editing plant genomes with CRISPR/Cas9. **2015**, 32, 76-84	364
1174	The CRISPR/Cas9 system for plant genome editing and beyond. **2015**, 33, 41-52	772
1173	Unraveling the potential of CRISPR-Cas9 for gene therapy. **2015**, 15, 311-4	19
1172	CRISPR RNA binding and DNA target recognition by purified Cascade complexes from Escherichia coli. **2015**, 43, 530-43	15
1171	Bacteriophage resistance mechanisms in the fish pathogen Flavobacterium psychrophilum: linking genomic mutations to changes in bacterial virulence factors. **2015**, 81, 1157-67	53
1170	Role of the Streptococcus mutans CRISPR-Cas systems in immunity and cell physiology. **2015**, 197, 749-61	47
1169	Characterization and evolution of Salmonella CRISPR-Cas systems. **2015**, 161, 374-86	64
1168	Molecular epidemiology and genomics of group A Streptococcus. **2015**, 33, 393-418	47
1167	Genome editing in crops: from bench to field. **2015**, 2, 13-15	18
1166	Chromosomal Mutagenesis. **2015**,	2

1165	Crystal structure of Thermobifida fusca Cse1 reveals target DNA binding site. **2015**, 24, 236-45	6
1164	Unveiling the inner workings of live bacteria using super-resolution microscopy. **2015**, 87, 42-63	45
1163	RNA-guided transcriptional regulation in planta via synthetic dCas9-based transcription factors. **2015**, 13, 578-89	245
1162	Cutting it close: CRISPR-associated endoribonuclease structure and function. **2015**, 40, 58-66	92
1161	Detection and analysis of CRISPRs of Shigella. **2015**, 70, 85-90	11
1160	Discovery of a conjugative megaplasmid in Bifidobacterium breve. **2015**, 81, 166-76	19
1159	Repurposing endogenous type I CRISPR-Cas systems for programmable gene repression. **2015**, 43, 674-81	153
1158	Technology developments in biological tools for targeted genome surgery. **2015**, 37, 29-39	6
1157	Chromosomal DNA deletion confers phage resistance to Pseudomonas aeruginosa. **2014**, 4, 4738	60
1156	Evolution of the CRISPR-Cas adaptive immunity systems in prokaryotes: models and observations on virus-host coevolution. **2015**, 11, 20-7	34
1155	Ethical Issues in Genome Editing using Crispr/Cas9 System. **2016**, 07,	13
1154	iPSCs: A Minireview from Bench to Bed, including Organoids and the CRISPR System. **2016**, 2016, 5934782	14
1153	CRISPR-Cas9: from Genome Editing to Cancer Research. **2016**, 12, 1427-1436	24
1152	Crisprs/Cas9 May Provide New Method for Drug Discovery and Development. **2016**, 07,	6
1151	Genome and catabolic subproteomes of the marine, nutritionally versatile, sulfate-reducing bacterium Desulfococcus multivorans DSM 2059. **2016**, 17, 918	21
1150	Emerging Technologies to Create Inducible and Genetically Defined Porcine Cancer Models. **2016**, 7, 28	13
1149	Genome Engineering with TALE and CRISPR Systems in Neuroscience. **2016**, 7, 47	21
1148	Survival and Evolution of CRISPR-Cas System in Prokaryotes and Its Applications. **2016**, 7, 375	20

1147	Quantifying Tradeoffs for Marine Viruses. **2016**, 3,	20
1146	The Global Reciprocal Reprogramming between Mycobacteriophage SWU1 and Mycobacterium Reveals the Molecular Strategy of Subversion and Promotion of Phage Infection. **2016**, 7, 41	5
1145	Genome Sequence of Type Strains of Genus Stenotrophomonas. **2016**, 7, 309	25
1144	Elucidating the Role of Effectors in Plant-Fungal Interactions: Progress and Challenges. **2016**, 7, 600	117
1143	Identification of Novel Genomic Islands in Liverpool Epidemic Strain of Pseudomonas aeruginosa Using Segmentation and Clustering. **2016**, 7, 1210	21
1142	Next-Generation Sequencing and Genome Editing in Plant Virology. **2016**, 7, 1325	75
1141	Virulence and Genomic Feature of Multidrug Resistant Isolated from Broiler Chicken. **2016**, 7, 1605	6
1140	Genomic Analysis of Phylotype I Strain EP1 Reveals Substantial Divergence from Other Strains in the Species Complex. **2016**, 7, 1719	11
1139	CRISPR-Cas Defense System and Potential Prophages in Cyanobacteria Associated with the Coral Black Band Disease. **2016**, 7, 2077	11
1138	The Influence of Copy-Number of Targeted Extrachromosomal Genetic Elements on the Outcome of CRISPR-Cas Defense. **2016**, 3, 45	21
1137	CRISPR/Cas9: Implications for Modeling and Therapy of Neurodegenerative Diseases. **2016**, 9, 30	34
1136	Defects of the Glycinergic Synapse in Zebrafish. **2016**, 9, 50	6
1135	Metabolic Genes within Cyanophage Genomes: Implications for Diversity and Evolution. **2016**, 7,	25
1134	RNA Interference in the Age of CRISPR: Will CRISPR Interfere with RNAi?. **2016**, 17, 291	46
1133	In Vivo Delivery Systems for Therapeutic Genome Editing. **2016**, 17,	54
1132	Diversity in a Polymicrobial Community Revealed by Analysis of Viromes, Endolysins and CRISPR Spacers. **2016**, 11, e0160574	12
1131	Targeted Genome Editing via CRISPR in the Pathogen Cryptococcus neoformans. **2016**, 11, e0164322	43
1130	PIWIs Go Viral: Arbovirus-Derived piRNAs in Vector Mosquitoes. **2016**, 12, e1006017	108

1129	An Overview of CRISPR-Based Tools and Their Improvements: New Opportunities in Understanding Plant-Pathogen Interactions for Better Crop Protection. **2016**, 7, 765	36
1128	The Virus–Host Interactome. **2016**, 157-167	2
1127	Phage-bacteria interaction network in human oral microbiome. **2016**, 18, 2143-58	67
1126	Large-scale maps of variable infection efficiencies in aquatic Bacteroidetes phage-host model systems. **2016**, 18, 3949-3961	18
1125	Analysis of defence systems and a conjugative IncP-1 plasmid in the marine polyaromatic hydrocarbons-degrading bacterium Cycloclasticus sp. 78-ME. **2016**, 8, 508-19	2
1124	The discovery of CRISPR in archaea and bacteria. **2016**, 283, 3162-9	76
1123	Prospects and challenges of CRISPR/Cas genome editing for the study and control of neglected vector-borne nematode diseases. **2016**, 283, 3204-21	32
1122	In vitro repair of a defective EGFP transcript and translation into a functional protein. **2016**, 14, 6729-37	6
1121	Transcriptomic and CRISPR/Cas9 technologies reveal FOXA2 as a tumor suppressor gene in pancreatic cancer. **2016**, 310, G1124-37	39
1120	Next stop for the CRISPR revolution: RNA-guided epigenetic regulators. **2016**, 283, 3181-93	52
1119	On the Origin of CRISPR-Cas Technology: From Prokaryotes to Mammals. **2016**, 24, 811-820	92
1118	CRISPR/Cas9: a breakthrough in generating mouse models for endocrinologists. **2016**, 57, R81-92	8
1117	TALEored Epigenetics: A DNA-Binding Scaffold for Programmable Epigenome Editing and Analysis. **2016**, 17, 975-80	7
1116	Current and future prospects for CRISPR-based tools in bacteria. **2016**, 113, 930-43	79
1115	Comparative Analysis of Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) of Streptococcus thermophilus St-I and its Bacteriophage-Insensitive Mutants (BIM) Derivatives. **2016**, 73, 393-400	5
1114	Draft Genome Sequence of Streptococcus gordonii Type Strain CCUG 33482T. **2016**, 4,	1
1113	Genome Sequence of Salegentibacter mishustinae KCTC 12263, Containing a Complete Subtype I-B CRISPR-Cas System. **2016**, 4,	1
1112	Guide RNAs: A Glimpse at the Sequences that Drive CRISPR-Cas Systems. **2016**, 2016,	11

1111	CRISPR-Cas9 systems: versatile cancer modelling platforms and promising therapeutic strategies. **2016**, 138, 1328-36	20
1110	Virus-host interplay in high salt environments. **2016**, 8, 431-44	15
1109	Gene Editing: Powerful New Tools for Nephrology Research and Therapy. **2016**, 27, 2940-2947	18
1108	Structure of Csm2 elucidates the relationship between small subunits of CRISPR-Cas effector complexes. **2016**, 590, 1521-9	14
1107	Structural basis for dimer formation of the CRISPR-associated protein Csm2 of Thermotoga maritima. **2016**, 283, 694-703	5
1106	Genome analysis of Campylobacter concisus strains from patients with inflammatory bowel disease and gastroenteritis provides new insights into pathogenicity. **2016**, 6, 38442	24
1105	To CRISPR and beyond: the evolution of genome editing in stem cells. **2016**, 11, 801-816	11
1104	Quorum Regulated Resistance of Vibrio cholerae against Environmental Bacteriophages. **2016**, 6, 37956	43
1103	DNA binding specificities of Escherichia coli Cas1-Cas2 integrase drive its recruitment at the CRISPR locus. **2017**, 45, 2714-2723	13
1102	Naturally Occurring Off-Switches for CRISPR-Cas9. **2016**, 167, 1829-1838.e9	260
1101	Overview of CRISPR-Cas9 Biology. **2016**, 2016,	10
1100	CRISPR-Cas type I-A Cascade complex couples viral infection surveillance to host transcriptional regulation in the dependence of Csa3b. **2017**, 45, 1902-1913	33
1099	tCRISPRi: tunable and reversible, one-step control of gene expression. **2016**, 6, 39076	39
1098	PAM-Dependent Target DNA Recognition and Cleavage by C2c1 CRISPR-Cas Endonuclease. **2016**, 167, 1814-1828.e12	130
1097	pRB Takes an EZ Path to a Repetitive Task. **2016**, 64, 1015-1017	1
1096	Come Together: CRISPR-Cas Immunity Senses the Quorum. **2016**, 64, 1013-1015	7
1095	Use of single molecule sequencing for comparative genomics of an environmental and a clinical isolate of Clostridium difficile ribotype 078. **2016**, 17, 1020	9
1094	A method to convert mRNA into a gRNA library for CRISPR/Cas9 editing of any organism. **2016**, 2, e1600699	12

1093	Host Organisms: Clostridium acetobutylicum/Clostridium beijerinckii and Related Organisms. **2016**, 327-364	
1092	Genetic chimerism of CRISPR/Cas9-mediated rice mutants. **2016**, 10, 425-435	11
1091	Genome editing for targeted improvement of plants. **2016**, 10, 327-343	23
1090	In vivo gene therapy potentials of CRISPR-Cas9. **2016**, 23, 557-9	20
1089	Designed nucleases for targeted genome editing. **2016**, 14, 448-62	39
1088	Identifying and Visualizing Functional PAM Diversity across CRISPR-Cas Systems. **2016**, 62, 137-47	206
1087	Healing a Heart Through Genetic Intervention. **2016**, 118, 920-2	2
1086	Deciphering and shaping bacterial diversity through CRISPR. **2016**, 31, 101-108	13
1085	CRISPR/Cas9 for Human Genome Engineering and Disease Research. **2016**, 17, 131-54	65
1084	The Past, Present, and Future of Genetic Manipulation in Toxoplasma gondii. **2016**, 32, 542-553	26
1083	Toward a Predictive Understanding of Earth's Microbiomes to Address 21st Century Challenges. **2016**, 7,	98
1082	CRISPR Immunological Memory Requires a Host Factor for Specificity. **2016**, 62, 824-833	101
1081	Genome engineering in ophthalmology: Application of CRISPR/Cas to the treatment of eye disease. **2016**, 53, 1-20	36
1080	Synthetic biology approaches in cancer immunotherapy, genetic network engineering, and genome editing. **2016**, 8, 504-17	6
1079	CRISPR/Cas9 produces anti-hepatitis B virus effect in hepatoma cells and transgenic mouse. **2016**, 217, 125-32	40
1078	Genome editing in pluripotent stem cells: research and therapeutic applications. **2016**, 473, 665-74	15
1077	Adaptation in CRISPR-Cas Systems. **2016**, 61, 797-808	148
1076	Genome engineering through CRISPR/Cas9 technology in the human germline and pluripotent stem cells. **2016**, 22, 411-9	63

1075 Immunoblot screening of CRISPR/Cas9-mediated gene knockouts without selection. **2016**, 17, 9 6

1074 A bacterial Argonaute with noncanonical guide RNA specificity. **2016**, 113, 4057-62 67

1073 Structural plasticity and in vivo activity of Cas1 from the type I-F CRISPR-Cas system. **2016**, 473, 1063-72 7

1072 Future Directions in Pain Management: Integrating Anatomically Selective Delivery Techniques With Novel Molecularly Selective Agents. **2016**, 91, 522-33 6

1071 An insight into the protospacer adjacent motif of Streptococcus pyogenes Cas9 with artificially stimulated RNA-guided-Cas9 DNA cleavage flexibility. **2016**, 6, 33514-33522 9

1070 The diversity-generating benefits of a prokaryotic adaptive immune system. **2016**, 532, 385-8 167

1069 Long Non-coding RNAs in Human Disease. **2016**, 3

1068 CRISPR/Cas9-Derived Mutations Both Inhibit HIV-1 Replication and Accelerate Viral Escape. **2016**, 15, 481-489 171

1067 FOXA1 defines cancer cell specificity. **2016**, 2, e1501473 31

1066 The crystal structure of Cpf1 in complex with CRISPR RNA. **2016**, 532, 522-6 196

1065 DNA-free genome editing methods for targeted crop improvement. **2016**, 35, 1469-74 41

1064 A CRISPR Path to Engineering New Genetic Mouse Models for Cardiovascular Research. **2016**, 36, 1058-75 33

1063 Highly Efficient Mouse Genome Editing by CRISPR Ribonucleoprotein Electroporation of Zygotes. **2016**, 291, 14457-67 179

1062 Gene Editing for Treatment of Neurological Infections. **2016**, 13, 547-54 8

1061 Imaging Specific Genomic DNA in Living Cells. **2016**, 45, 1-23 52

1060 Engineering Delivery Vehicles for Genome Editing. **2016**, 7, 637-62 75

1059 Æ Hydrolase domain-containing 6 (ABHD6) negatively regulates the surface delivery and synaptic function of AMPA receptors. **2016**, 113, E2695-704 44

1058 The Sponge Hologenome. **2016**, 7, e00135-16 177

1057	CRISPR/Cas9 in Genome Editing and Beyond. **2016**, 85, 227-64	644
1056	Cellular processing and destinies of artificial DNA nanostructures. **2016**, 45, 4199-225	114
1055	Bacteriophages with potential to inactivate Salmonella Typhimurium: Use of single phage suspensions and phage cocktails. **2016**, 220, 179-92	59
1054	Cell Biology and Microbiology: A Continuous Cross-Feeding. **2016**, 26, 469-471	1
1053	Customizing the genome as therapy for the Ehemoglobinopathies. **2016**, 127, 2536-45	38
1052	A genome editing primer for the hematologist. **2016**, 127, 2525-35	21
1051	CRISPR-Cas Systems Optimize Their Immune Response by Specifying the Site of Spacer Integration. **2016**, 64, 616-623	63
1050	Protecting genome integrity during CRISPR immune adaptation. **2016**, 23, 876-883	49
1049	CRISPRDetect: A flexible algorithm to define CRISPR arrays. **2016**, 17, 356	154
1048	CRISPR-mediated genome editing and human diseases. **2016**, 3, 244-251	51
1047	A CRISPR evolutionary arms race: structural insights into viral anti-CRISPR/Cas responses. **2016**, 26, 1165-1168	45
1046	A molecular arms race: new insights into anti-CRISPR mechanisms. **2016**, 23, 765-6	5
1045	Invertebrate Bacteriology. **2016**,	1
1044	Applications of CRISPR Genome Engineering in Cell Biology. **2016**, 26, 875-888	58
1043	Applications of CRISPR technologies in research and beyond. **2016**, 34, 933-941	544
1042	Guide RNA engineering for versatile Cas9 functionality. **2016**, 44, 9555-9564	44
1041	Recent Advances in Stem Cells. **2016**,	1
1040	CRISPR-Cas: biology, mechanisms and relevance. **2016**, 371,	168

1039	CRISPRi engineering E. coli for morphology diversification. **2016**, 38, 358-369		77
1038	A touch of sleep: biophysical model of contact-mediated dormancy of archaea by viruses. **2016**, 283,		4
1037	Characterization of CRISPR-Cas system in clinical Staphylococcus epidermidis strains revealed its potential association with bacterial infection sites. **2016**, 193, 103-110		17
1036	Molecular determinants for CRISPR RNA maturation in the Cas10-Csm complex and roles for non-Cas nucleases. **2017**, 45, 2112-2123		24
1035	The emerging patent landscape of CRISPR-Cas gene editing technology. **2016**, 34, 1025-1031		60
1034	Phosphorylation, an Altruistic Bacterial Trick to Halt Phages. **2016**, 20, 409-410		
1033	CRISPR. **2016**, 87-98		0
1032	Genetic Engineering of Plants Using Zn Fingers, TALENs, and CRISPRs. **2016**, 187-201		2
1031	Taxonomy of Yersinia pestis. **2016**, 918, 35-78		8
1030	Genetic mechanisms of adaptive immunity emergence in vertebrates. **2016**, 52, 664-675		2
1029	Methods for Optimizing CRISPR-Cas9 Genome Editing Specificity. **2016**, 63, 355-70		190
1028	Diverse evolutionary roots and mechanistic variations of the CRISPR-Cas systems. *Science*, **2016**, 353, aad5147	33.3	378
1027	Prospects for application of breakthrough technologies in breeding: The CRISPR/Cas9 system for plant genome editing. **2016**, 52, 676-687		16
1026	Comparative genomic analysis of Lactobacillus plantarum ZJ316 reveals its genetic adaptation and potential probiotic profiles. **2016**, 17, 569-79		26
1025	In Vitro Evaluation of CRISPR/Cas9 Function by an Electrochemiluminescent Assay. **2016**, 88, 8369-74		25
1024	Genome Editing. **2016**,		3
1023	Extending CRISPR-Cas9 Technology from Genome Editing to Transcriptional Engineering in the Genus Clostridium. **2016**, 82, 6109-6119		44
1022	Candida albicans Gene Deletion with a Transient CRISPR-Cas9 System. **2016**, 1,		113

1021	Genome- and Cell-Based Strategies in Therapy of Muscular Dystrophies. **2016**, 81, 678-90	3
1020	The application of somatic CRISPR-Cas9 to conditional genome editing in Caenorhabditis elegans. **2016**, 54, 170-81	7
1019	Active and adaptive Legionella CRISPR-Cas reveals a recurrent challenge to the pathogen. **2016**, 18, 1319-38	20
1018	Application of CRISPR-Cas system in gene therapy: Pre-clinical progress in animal model. **2016**, 46, 1-8	6
1017	Using CRISPR-Cas9 Genome Editing to Enhance Cell Based Therapies for the Treatment of Diabetes Mellitus. **2016**, 127-147	1
1016	At the Conflux of Human Genome Engineering and Induced Pluripotency. **2016**, 45-64	1
1015	Current Status of Genome Editing in Cardiovascular Medicine. **2016**, 107-126	1
1014	CRISPR/Cas9: a promising way to exploit´genetic variation in plants. **2016**, 38, 1991-2006	32
1013	Immigration of susceptible hosts triggers the evolution of alternative parasite defence strategies. **2016**, 283,	26
1012	Requirements for Pseudomonas aeruginosa Type I-F CRISPR-Cas Adaptation Determined Using a Biofilm Enrichment Assay. **2016**, 198, 3080-3090	15
1011	CRISPR-Cas9 for in vivo Gene Therapy: Promise and Hurdles. **2016**, 5, e349	92
1010	Assemble CRISPRs from metagenomic sequencing data. **2016**, 32, i520-i528	6
1009	CRISPR Diversity and Microevolution in Clostridium difficile. **2016**, 8, 2841-55	35
1008	Understanding the Streptococcus mutans Cid/Lrg System through CidB Function. **2016**, 82, 6189-6203	20
1007	Tissue-specific gene targeting using CRISPR/Cas9. **2016**, 135, 189-202	17
1006	CRISPR technologies for bacterial systems: Current achievements and future directions. **2016**, 34, 1180-1209	104
1005	Evolution and Ecology of CRISPR. **2016**, 47, 307-331	48
1004	Uncovering Earth's virome. **2016**, 536, 425-30	551

1003	Perspectives on the Transition From Bacterial Phytopathogen Genomics Studies to Applications Enhancing Disease Management: From Promise to Practice. **2016**, 106, 1071-1082	9
1002	Cas9-catalyzed DNA Cleavage Generates Staggered Ends: Evidence from Molecular Dynamics Simulations. **2016**, 5, 37584	74
1001	Systems Metabolic Engineering of Escherichia coli. **2016**, 7,	23
1000	The Evolutionary History, Demography, and Spread of the Mycobacterium tuberculosis Complex. **2016**, 4,	22
999	Noncoding RNAs, Origin and Evolution of. **2016**, 130-135	3
998	Easy regulation of metabolic flux in Escherichia coli using an endogenous type I-E CRISPR-Cas system. **2016**, 15, 195	22
997	Genome editing: A breakthrough in life science and medicine. **2016**, 63, 105-10	8
996	CRISPR-Cas9 technology and its application in haematological disorders. **2016**, 175, 208-225	15
995	Repeat Size Determination by Two Molecular Rulers in the Type I-E CRISPR Array. **2016**, 16, 2811-2818	21
994	The Bacterial Cell. **2016**, 3-29	
993	CRISPR-Cas9 therapeutics in cancer: promising strategies and present challenges. **2016**, 1866, 197-207	36
992	Major and minor crRNA annealing sites facilitate low stringency DNA protospacer binding prior to Type I-A CRISPR-Cas interference in Sulfolobus. **2016**, 13, 1166-1173	11
991	Comparative genomic analysis identifies structural features of CRISPR-Cas systems in Riemerella anatipestifer. **2016**, 17, 689	14
990	Diversity of CRISPR-Cas-Mediated Mechanisms of Adaptive Immunity in Prokaryotes and Their Application in Biotechnology. **2016**, 81, 653-61	8
989	Methods of Genome Engineering: a New Era of Molecular Biology. **2016**, 81, 662-77	5
988	Structural features of Cas2 from Thermococcus onnurineus in CRISPR-cas system type IV. **2016**, 25, 1890-7	7
987	CRISPR-Cas9-Guided Genome Engineering in C. elegans. **2016**, 115, 31.7.1-31.7.18	6
986	Genome editing revolutionize the creation of genetically modified pigs for modeling human diseases. **2016**, 135, 1093-105	34

985	Proteomics and molecular tools for unveiling missing links in the biochemical understanding of schizophrenia. **2016**, 10, 1148-1158	9
984	Evolutionary Ecology of Prokaryotic Immune Mechanisms. **2016**, 80, 745-63	139
983	Draft Genome Sequence of Moraxella catarrhalis Type Strain CCUG 353T. **2016**, 4,	1
982	Investigating essential gene function in Mycobacterium tuberculosis using an efficient CRISPR interference system. **2016**, 44, e143	75
981	Genome editing: the road of CRISPR/Cas9 from bench to clinic. **2016**, 48, e265	55
980	Anti-cas spacers in orphan CRISPR4 arrays prevent uptake of active CRISPR-Cas I-F systems. **2016**, 1, 16081	25
979	Inactivation of CRISPR-Cas systems by anti-CRISPR proteins in diverse bacterial species. **2016**, 1, 16085	203
978	IMG/VR: a database of cultured and uncultured DNA Viruses and retroviruses. **2017**, 45, D457-D465	115
977	Quorum Sensing Controls Adaptive Immunity through the Regulation of Multiple CRISPR-Cas Systems. **2016**, 64, 1102-1108	121
976	CRISPR Technology Reveals RAD(51)-ical Mechanisms of Repair in Roundworms: An Educational Primer for Use with "Promotion of Homologous Recombination by SWS-1 in Complex with RAD-51 Paralogs in Caenorhabditis elegans". **2016**, 204, 883-891	2
975	Visualization analysis of CRISPR/Cas9 gene editing technology studies. **2016**, 17, 798-806	2
974	CRISPR-cas loci profiling of Cronobacter sakazakii pathovars. **2016**, 11, 1507-1519	18
973	Interference-driven spacer acquisition is dominant over naive and primed adaptation in a native CRISPR-Cas system. **2016**, 7, 12853	102
972	Microbial metabolisms in a 2.5-km-deep ecosystem created by hydraulic fracturing in shales. **2016**, 1, 16146	144
971	CRISPRdigger: detecting CRISPRs with better direct repeat annotations. **2016**, 6, 32942	14
970	Coevolution, Bacterial-Phage. **2016**, 305-313	
969	CRISPR/Cas9-Mediated Immunity to Geminiviruses: Differential Interference and Evasion. **2016**, 6, 26912	146
968	Endonuclease mediated genome editing in drug discovery and development: promises and challenges. **2016**, 21-22, 17-25	1

967	Zebrafish Genome Engineering Using the CRISPR-Cas9 System. **2016**, 32, 815-827		93
966	One step engineering of the small-subunit ribosomal RNA using CRISPR/Cas9. **2016**, 6, 30714		10
965	Exploring the ecological function of CRISPR-Cas virus defense. **2016**, 9, e1216740		1
964	Electric fish genomics: Progress, prospects, and new tools for neuroethology. **2016**, 110, 259-272		9
963	Harnessing heterologous and endogenous CRISPR-Cas machineries for efficient markerless genome editing in Clostridium. **2016**, 6, 25666		114
962	Dynamics of genome change among Legionella species. **2016**, 6, 33442		14
961	Do Mitochondria Have an Immune System?. **2016**, 81, 1229-1236		2
960	Efficient and Heritable Targeted Mutagenesis in Mosses Using the CRISPR/Cas9 System. **2016**, 57, 2600-2610		24
959	Genome-scale deletion screening of human long non-coding RNAs using a paired-guide RNA CRISPR-Cas9 library. **2016**, 34, 1279-1286		269
958	Conformational Control of Cascade Interference and Priming Activities in CRISPR Immunity. **2016**, 64, 826-834		36
957	Structural roles of guide RNAs in the nuclease activity of Cas9 endonuclease. **2016**, 7, 13350		68
956	Imipenem represses CRISPR-Cas interference of DNA acquisition through H-NS stimulation in Klebsiella pneumoniae. **2016**, 6, 31644		22
955	Gene Therapy and Gene Editing for the Corneal Dystrophies. **2016**, 5, 312-6		9
954	Characterization of CRISPR RNA transcription by exploiting stranded metatranscriptomic data. **2016**, 22, 945-56		5
953	Clustered regulatory interspaced short palindromic repeats (CRISPR)-mediated mutagenesis and phenotype rescue by piggyBac transgenesis in a nonmodel Drosophila species. **2016**, 25, 355-61		14
952	Long read and single molecule DNA sequencing simplifies genome assembly and TAL effector gene analysis of Xanthomonas translucens. **2016**, 17, 21		42
951	Applications of CRISPR-Cas in its natural habitat. **2016**, 34, 30-36		5
950	Molecular recordings by directed CRISPR spacer acquisition. *Science*, **2016**, 353, aaf1175	33.3	129

949	Treating hemoglobinopathies using gene-correction approaches: promises and challenges. **2016**, 135, 993-1010		12
948	Editing of the Bacillus subtilis Genome by the CRISPR-Cas9 System. **2016**, 82, 5421-7		152
947	Multiplex gene editing of the Yarrowia lipolytica genome using the CRISPR-Cas9 system. **2016**, 43, 1085-93		121
946	Highly efficient primed spacer acquisition from targets destroyed by the Escherichia coli type I-E CRISPR-Cas interfering complex. **2016**, 113, 7626-31		68
945	The Clustered, Regularly Interspaced, Short Palindromic Repeats-associated Endonuclease 9 (CRISPR/Cas9)-created MDM2 T309G Mutation Enhances Vitreous-induced Expression of MDM2 and Proliferation and Survival of Cells. **2016**, 291, 16339-47		21
944	Precise treatment of cystic fibrosis □current treatments and perspectives for using CRISPR. **2016**, 1, 169-180		5
943	Programming Native CRISPR Arrays for the Generation of Targeted Immunity. **2016**, 7,		18
942	ssDNA and the Argonautes: The Quest for the Next Golden Editor. **2016**, 27, 419-22		4
941	Design of a CRISPR-Cas system to increase resistance of Bacillus subtilis to bacteriophage SPP1. **2016**, 43, 1183-8		14
940	Use of genome-editing tools to treat sickle cell disease. **2016**, 135, 1011-28		18
939	C2c2 is a single-component programmable RNA-guided RNA-targeting CRISPR effector. *Science*, **2016**, 353, aaf5573	33.3	1037
938	Genetically Engineered Phages: a Review of Advances over the Last Decade. **2016**, 80, 523-43		234
937	DNA motifs determining the accuracy of repeat duplication during CRISPR adaptation in Haloarcula hispanica. **2016**, 44, 4266-77		32
936	Functional validation of cadherin as a receptor of Bt toxin Cry1Ac in Helicoverpa armigera utilizing the CRISPR/Cas9 system. **2016**, 76, 11-17		87
935	Natural killer cell memory in context. **2016**, 28, 368-76		25
934	Second Pallister-Opitz Genetics Symposium, Helena, Montana, July 2015. **2016**, 170, 1405-21		
933	Ecological and genetic interactions between cyanobacteria and viruses in a low-oxygen mat community inferred through metagenomics and metatranscriptomics. **2016**, 18, 358-71		28
932	Metagenomic analysis of a high carbon dioxide subsurface microbial community populated by chemolithoautotrophs and bacteria and archaea from candidate phyla. **2016**, 18, 1686-703		59

931	Engineering Synthetic Gene Circuits in Living Cells with CRISPR Technology. **2016**, 34, 535-547	82
930	Genetic manipulation of brain endothelial cells in vivo. **2016**, 1862, 381-94	9
929	The Neisseria meningitidis CRISPR-Cas9 System Enables Specific Genome Editing in Mammalian Cells. **2016**, 24, 645-54	150
928	Impact of Different Target Sequences on Type III CRISPR-Cas Immunity. **2016**, 198, 941-50	32
927	Genome-editing Technologies for Gene and Cell Therapy. **2016**, 24, 430-46	413
926	Biology and Applications of CRISPR Systems: Harnessing Nature's Toolbox for Genome Engineering. **2016**, 164, 29-44	715
925	The Heroes of CRISPR. **2016**, 164, 18-28	266
924	Complete genome sequence of Klebsiella pneumoniae J1, a protein-based microbial flocculant-producing bacterium. **2016**, 220, 90-1	5
923	Structural basis for the endoribonuclease activity of the type III-A CRISPR-associated protein Csm6. **2016**, 22, 318-29	95
922	In vivo blunt-end cloning through CRISPR/Cas9-facilitated non-homologous end-joining. **2016**, 44, e76	64
921	CRISPR-Based Typing and Next-Generation Tracking Technologies. **2016**, 7, 395-411	47
920	Computational approaches to predict bacteriophage-host relationships. **2016**, 40, 258-72	235
919	Streptococcus thermophilus CRISPR-Cas9 Systems Enable Specific Editing of the Human Genome. **2016**, 24, 636-44	148
918	Spell Checking Nature: Versatility of CRISPR/Cas9 for Developing Treatments for Inherited Disorders. **2016**, 98, 90-101	67
917	Beyond editing: repurposing CRISPR-Cas9 for precision genome regulation and interrogation. **2016**, 17, 5-15	538
916	CRISPR-Cas9 for medical genetic screens: applications and future perspectives. **2016**, 53, 91-7	30
915	Applications of CRISPR-Cas systems in neuroscience. **2016**, 17, 36-44	165
914	The CRISPR-associated Csx1 protein of Pyrococcus furiosus is an adenosine-specific endoribonuclease. **2016**, 22, 216-24	61

913	Crystal Structure of Streptococcus pyogenes Cas1 and Its Interaction with Csn2 in the Type II CRISPR-Cas System. **2016**, 24, 70-79	18
912	BIOMAP: A Home for All Biology Methods. **2016**, 1, bpv001	0
911	Mutualistic viruses and the heteronomy of life. **2016**, 59, 80-8	22
910	Sequence-Specific Nucleases for Genetic Improvement of Potato. **2016**, 93, 303-320	6
909	CRISPR/Cas9: an advanced tool for editing plant genomes. **2016**, 25, 561-73	61
908	Potential pitfalls of CRISPR/Cas9-mediated genome editing. **2016**, 283, 1218-31	151
907	Efficient identification of CRISPR/Cas9-induced insertions/deletions by direct germline screening in zebrafish. **2016**, 17, 259	16
906	Complete genome of Martelella sp. AD-3, a moderately halophilic polycyclic aromatic hydrocarbons-degrading bacterium. **2016**, 225, 29-30	5
905	Efficient Genome Editing in Chicken DF-1 Cells Using the CRISPR/Cas9 System. **2016**, 6, 917-23	19
904	Genetics and Genomics of Brachypodium. **2016**,	9
903	Post-translational Regulation of Cas9 during G1 Enhances Homology-Directed Repair. **2016**, 14, 1555-1566	175
902	Major bacterial lineages are essentially devoid of CRISPR-Cas viral defence systems. **2016**, 7, 10613	129
901	Chemical and Biophysical Modulation of Cas9 for Tunable Genome Engineering. **2016**, 11, 681-8	72
900	Degradation of Phage Transcripts by CRISPR-Associated RNases Enables Type III CRISPR-Cas Immunity. **2016**, 164, 710-21	143
899	Computational models of populations of bacteria and lytic phage. **2016**, 42, 942-68	23
898	A novel chimeric prophage vB_LdeS-phiJB from commercial Lactobacillus delbrueckii subsp. bulgaricus. **2016**, 43, 681-9	7
897	Harnessing the Prokaryotic Adaptive Immune System as a Eukaryotic Antiviral Defense. **2016**, 24, 294-306	19
896	RNA-activated DNA cleavage by the Type III-B CRISPR-Cas effector complex. **2016**, 30, 460-70	119

895	The role of temperate bacteriophages in bacterial infection. **2016**, 363, fnw015		77
894	Editing the Mouse Genome Using the CRISPR-Cas9 System. **2016**, 2016, pdb.top087536		13
893	Direct CRISPR spacer acquisition from RNA by a natural reverse transcriptase-Cas1 fusion protein. *Science*, **2016**, 351, aad4234	33.3	120
892	Gene editing technology as an approach to the treatment of liver diseases. **2016**, 16, 595-608		10
891	Counteracting selection for antibiotic-resistant bacteria. **2016**, 6, e1096996		10
890	Methodological and Clinical Aspects of the Molecular Epidemiology of Mycobacterium tuberculosis and Other Mycobacteria. **2016**, 29, 239-90		93
889	Friendly Fire: Biological Functions and Consequences of Chromosomal Targeting by CRISPR-Cas Systems. **2016**, 198, 1481-6		27
888	Next Generation Prokaryotic Engineering: The CRISPR-Cas Toolkit. **2016**, 34, 575-587		95
887	A Broad Overview and Review of CRISPR-Cas Technology and Stem Cells. **2016**, 2, 9-20		25
886	Kinetics of the CRISPR-Cas9 effector complex assembly and the role of 3'-terminal segment of guide RNA. **2016**, 44, 2837-45		52
885	A mouse model for adult cardiac-specific gene deletion with CRISPR/Cas9. **2016**, 113, 338-43		115
884	CRISPR/Cas9 advances engineering of microbial cell factories. **2016**, 34, 44-59		152
883	CRISPR-Cas adaptation: insights into the mechanism of action. **2016**, 14, 67-76		234
882	Complete genome sequence of Chelatococcus sp. CO-6, a crude-oil-degrading bacterium. **2016**, 219, 20-1		1
881	Multi-gene engineering in plants with RNA-guided Cas9 nuclease. **2016**, 37, 69-75		24
880	Phage-Host Interactions of Cheese-Making Lactic Acid Bacteria. **2016**, 7, 267-85		35
879	Programming Biology: Expanding the Toolset for the Engineering of Transcription. **2016**, 1-64		2
878	Embryonic Stem Cell Protocols. **2016**,		

877	Exploiting CRISPR-Cas immune systems for genome editing in bacteria. **2016**, 37, 61-68	50
876	Functional Analysis of Bacteriophage Immunity through a Type I-E CRISPR-Cas System in Vibrio cholerae and Its Application in Bacteriophage Genome Engineering. **2016**, 198, 578-90	59
875	Complete genome analysis of Clostridium bornimense strain M2/40(T): A new acidogenic Clostridium species isolated from a mesophilic two-phase laboratory-scale biogas reactor. **2016**, 232, 38-49	13
874	Metagenomic reconstructions of bacterial CRISPR loci constrain population histories. **2016**, 10, 858-70	51
873	Controlling transcription in human pluripotent stem cells using CRISPR-effectors. **2016**, 101, 36-42	13
872	Synthetic Biology. **2016**,	1
871	Cytoprotective role of autophagy against BH3 mimetic gossypol in ATG5 knockout cells generated by CRISPR-Cas9 endonuclease. **2016**, 370, 19-26	13
870	Genome editing in Ustilago maydis using the CRISPR-Cas system. **2016**, 89, 3-9	142
869	Improved traceability of Shiga-toxin-producing Escherichia coli using CRISPRs for detection and typing. **2016**, 23, 8163-74	6
868	Slow Microbial Life in the Seabed. **2016**, 8, 311-32	99
867	CRISPR-Cas9 technology: applications and human disease modelling. **2017**, 16, 4-12	25
866	Efficacy of Phage and Ciprofloxacin Co-therapy on the Formation and Eradication of Pseudomonas aeruginosa Biofilms. **2017**, 42, 95-103	13
865	Applications of the CRISPR/Cas9 system in murine cancer modeling. **2017**, 16, 25-33	11
864	Genome-scale CRISPR pooled screens. **2017**, 532, 95-99	35
863	Targeted genome regulation via synthetic programmable transcriptional regulators. **2017**, 37, 429-440	18
862	Complete Sequence and Organization of pFR260, the Bacillus thuringiensis INTA Fr7-4 Plasmid Harboring Insecticidal Genes. **2017**, 27, 43-54	3
861	Population genomic insights into variation and evolution of Xanthomonas oryzae pv. oryzae. **2017**, 7, 40694	29
860	Comparative genomic analysis of wide and narrow host range strains of Xanthomonas citri subsp. citri, showing differences in the genetic content of their pathogenicity and virulence factors. **2017**, 46, 49-61	4

859	Diversity and evolution of class 2 CRISPR-Cas systems. **2017**, 15, 169-182	516
858	Bioinformatic prediction and functional characterization of human KIAA0100 gene. **2017**, 7, 10-18	4
857	Towards a CRISPR view of early human development: applications, limitations and ethical concerns of genome editing in human embryos. **2017**, 144, 3-7	30
856	Prophage-mediated defence against viral attack and viral counter-defence. **2017**, 2, 16251	118
855	CRISPR-Cas type II-based Synthetic Biology applications in eukaryotic cells. **2017**, 14, 1286-1293	8
854	Comparative analysis of CRISPR-Cas systems in Klebsiella genomes. **2017**, 57, 325-336	24
853	Efficient Genome Editing of a Facultative Thermophile Using Mesophilic spCas9. **2017**, 6, 849-861	40
852	Models of life: epigenetics, diversity and cycles. **2017**, 80, 042601	6
851	The Interfaces of Genetic Conflict Are Hot Spots for Innovation. **2017**, 168, 9-11	7
850	Shining a Light on Phase Separation in the Cell. **2017**, 168, 11-13	1
849	Two Distant Catalytic Sites Are Responsible for C2c2 RNase Activities. **2017**, 168, 121-134.e12	164
848	Genomic reconstruction of multiple lineages of uncultured benthic archaea suggests distinct biogeochemical roles and ecological niches. **2017**, 11, 1118-1129	48
847	Application of the CRISPR gene-editing technique in insect functional genome studies – a review. **2017**, 162, 124-132	15
846	CRISPR/CAS9 Technologies. **2017**, 32, 883-888	14
845	CRISPR-Mediated Bacterial Genome Editing in Food Safety and Industry. **2017**, 211-224	
844	CRISPR/Cpf1-mediated DNA-free plant genome editing. **2017**, 8, 14406	274
843	CRISPR-Cas in the laboratory classroom. **2017**, 2, 17018	3
842	Detecting natural adaptation of the Streptococcus thermophilus CRISPR-Cas systems in research and classroom settings. **2017**, 12, 547-565	22

841	Non-classical phase diagram for virus bacterial coevolution mediated by clustered regularly interspaced short palindromic repeats. **2017**, 14,	13
840	Not all predicted CRISPR-Cas systems are equal: isolated cas genes and classes of CRISPR like elements. **2017**, 18, 92	89
839	CRISPR-Cas and Contact-Dependent Secretion Systems Present on Excisable Pathogenicity Islands with Conserved Recombination Modules. **2017**, 199,	14
838	Fragmentation of the CRISPR-Cas Type I-B signature protein Cas8b. **2017**, 1861, 2993-3000	7
837	Potential of gene drives with genome editing to increase genetic gain in livestock breeding programs. **2017**, 49, 3	20
836	Shiga toxins. **2017**,	5
835	CRISPR-Cas Technologies and Applications in Food Bacteria. **2017**, 8, 413-437	28
834	Programmable transcriptional repression in mycobacteria using an orthogonal CRISPR interference platform. **2017**, 2, 16274	204
833	Genome editing for inborn errors of metabolism: advancing towards the clinic. **2017**, 15, 43	30
832	CRISPR/Cas9-mediated targeted mutagenesis in upland cotton (Gossypium hirsutum L.). **2017**, 94, 349-360	44
831	Regulation of Shiga Toxin Production. **2017**, 47-61	
830	Phage-host interactions in Streptococcus thermophilus: Genome analysis of phages isolated in Uruguay and ectopic spacer acquisition in CRISPR array. **2017**, 7, 43438	33
829	Mutagenesis and Transgenesis in Zebrafish. **2017**, 1-31	1
828	Virulence of Endodontic Bacterial Pathogens. **2017**, 149-177	
827	Recent advances in genetic modification systems for Actinobacteria. **2017**, 101, 2217-2226	10
826	Therapeutic genome engineering via CRISPR-Cas systems. **2017**, 9, e1380	17
825	Anopheline Reproductive Biology: Impacts on Vectorial Capacity and Potential Avenues for Malaria Control. **2017**, 7,	20
824	Genome editing: a robust technology for human stem cells. **2017**, 74, 3335-3346	9

823	Kidney Development and Disease. **2017**,	1
822	An efficient method to enrich for knock-out and knock-in cellular clones using the CRISPR/Cas9 system. **2017**, 74, 3413-3423	7
821	Uncoupling neurogenic gene networks in the embryo. **2017**, 31, 634-638	15
820	Mathematical modelling of CRISPR-Cas system effects on biofilm formation. **2017**, 11, 264-284	3
819	Advancing chimeric antigen receptor T cell therapy with CRISPR/Cas9. **2017**, 8, 634-643	64
818	Zebrafish as a Model of Kidney Disease. **2017**, 60, 55-75	28
817	A facile, rapid and sensitive detection of MRSA using a CRISPR-mediated DNA FISH method, antibody-like dCas9/sgRNA complex. **2017**, 95, 67-71	74
816	Construction of a Gene Knockdown System Based on Catalytically Inactive ("Dead") Cas9 (dCas9) in Staphylococcus aureus. **2017**, 83,	27
815	Engineering Halomonas species TD01 for enhanced polyhydroxyalkanoates synthesis via CRISPRi. **2017**, 16, 48	64
814	Advances in CRISPR-Cas based genome engineering. **2017**, 1, 78-86	4
813	Spacer-length DNA intermediates are associated with Cas1 in cells undergoing primed CRISPR adaptation. **2017**, 45, 3297-3307	18
812	The spacer size of I-B CRISPR is modulated by the terminal sequence of the protospacer. **2017**, 45, 4642-4654	17
811	Panacea in progress: CRISPR and the future of its biological research introduction. **2017**, 201, 63-74	4
810	Plant genome editing with TALEN and CRISPR. **2017**, 7, 21	141
809	A lentivirus-free inducible CRISPR-Cas9 system for efficient targeting of human genes. **2017**, 530, 40-49	4
808	Mechanism of duplex DNA destabilization by RNA-guided Cas9 nuclease during target interrogation. **2017**, 114, 5443-5448	48
807	CRISPR/Cas9: at the cutting edge of hepatology. **2017**, 66, 1329-1340	26
806	CRISPR Editing in Biological and Biomedical Investigation. **2017**, 118, 4152-4162	5

805	RNA Targeting by Functionally Orthogonal Type VI-A CRISPR-Cas Enzymes. **2017**, 66, 373-383.e3	139
804	Current application of CRISPR/Cas9 gene-editing technique to eradication of HIV/AIDS. **2017**, 24, 377-384	25
803	High-content analysis screening for cell cycle regulators using arrayed synthetic crRNA libraries. **2017**, 251, 189-200	22
802	Dramatic Improvement of CRISPR/Cas9 Editing in by Increased Single Guide RNA Expression. **2017**, 2,	51
801	CRISPR-Cas9 technology: applications in genome engineering, development of sequence-specific antimicrobials, and future prospects. **2017**, 9, 109-122	33
800	CRISPR-based engineering of next-generation lactic acid bacteria. **2017**, 37, 79-87	48
799	CRISPRi-sRNA: Transcriptional-Translational Regulation of Extracellular Electron Transfer in Shewanella oneidensis. **2017**, 6, 1679-1690	51
798	Cellular function reinstitution of offspring red blood cells cloned from the sickle cell disease patient blood post CRISPR genome editing. **2017**, 10, 119	15
797	A systematic evaluation of nucleotide properties for CRISPR sgRNA design. **2017**, 18, 297	18
796	Developmental history and application of CRISPR in human disease. **2017**, 19, e2963	6
795	The CRISPR-Cas app goes viral. **2017**, 37, 103-109	6
794	Bacteriophages Infecting Lactic Acid Bacteria. **2017**, 249-272	2
793	Application of CRISPR-Cas9 in eye disease. **2017**, 161, 116-123	7
792	CRISPR/dCas9-mediated inhibition of gene expression in Staphylococcus aureus. **2017**, 139, 79-86	16
791	Antiviral Goes Viral: Harnessing CRISPR/Cas9 to Combat Viruses in Humans. **2017**, 25, 833-850	50
790	Genome editing in Drosophila melanogaster: from basic genome engineering to the multipurpose CRISPR-Cas9 system. **2017**, 60, 476-489	9
789	Asymmetric positioning of Cas1-2 complex and Integration Host Factor induced DNA bending guide the unidirectional homing of protospacer in CRISPR-Cas type I-E system. **2017**, 45, 367-381	38
788	CRISPR-Cas orthologues and variants: optimizing the repertoire, specificity and delivery of genome engineering tools. **2017**, 28, 247-261	75

787	High-Throughput Characterization of Cascade type I-E CRISPR Guide Efficacy Reveals Unexpected PAM Diversity and Target Sequence Preferences. **2017**, 206, 1727-1738	16
786	CRISPR/Cas9-Based Genome Editing for Disease Modeling and Therapy: Challenges and Opportunities for Nonviral Delivery. **2017**, 117, 9874-9906	287
785	The Candidatus Liberibacter-Host Interface: Insights into Pathogenesis Mechanisms and Disease Control. **2017**, 55, 451-482	161
784	Progress and Application of CRISPR/Cas Technology in Biological and Biomedical Investigation. **2017**, 118, 3061-3071	6
783	Cucumber green mottle mosaic virus: Rapidly Increasing Global Distribution, Etiology, Epidemiology, and Management. **2017**, 55, 231-256	73
782	Therapeutic editing of hepatocyte genome in vivo. **2017**, 67, 818-828	16
781	Genome-editing technologies and patent landscape overview. **2017**, 6, 115-134	3
780	Enhancing the genome editing toolbox: genome wide CRISPR arrayed libraries. **2017**, 7, 2244	26
779	Structural and dynamic insights into the role of conformational switching in the nuclease activity of the Cas2 in CRISPR-mediated adaptive immunity. **2017**, 4, 054701	6
778	Generation of SMURF2 knockout human cells using the CRISPR/Cas9 system. **2017**, 531, 56-59	6
777	Aio-Casilio: a robust CRISPR-Cas9-Pumilio system for chromosome labeling. **2017**, 48, 293-299	6
776	Alternate binding modes of anti-CRISPR viral suppressors AcrF1/2 to Csy surveillance complex revealed by cryo-EM structures. **2017**, 27, 853-864	42
775	CRISPR-Cas. **2017**, 51, 338-343	1
774	Metagenomics of microbial and viral life in terrestrial geothermal environments. **2017**, 16, 425-454	17
773	Inhibition Mechanism of an Anti-CRISPR Suppressor AcrIIA4 Targeting SpyCas9. **2017**, 67, 117-127.e5	103
772	Suppressing the CRISPR/Cas adaptive immune system in bacterial infections. **2017**, 36, 2043-2051	17
771	Spacer capture and integration by a type I-F Cas1-Cas2-3 CRISPR adaptation complex. **2017**, 114, E5122-E5128	71
770	RNA activation-independent DNA targeting of the Type III CRISPR-Cas system by a Csm complex. **2017**, 18, 826-840	17

769	The CRISPR-Cas9 system in Neisseria spp. **2017**, 75,		9
768	New variants of CRISPR RNA-guided genome editing enzymes. **2017**, 15, 917-926		63
767	CRISPR/Cas9-mediated efficient genome editing via blastospore-based transformation in entomopathogenic fungus Beauveria bassiana. **2017**, 8, 45763		40
766	Optimizing the DNA Donor Template for Homology-Directed Repair of Double-Strand Breaks. **2017**, 7, 53-60		73
765	Disease modeling in genetic kidney diseases: zebrafish. **2017**, 369, 127-141		17
764	Genome Engineering of Virulent Lactococcal Phages Using CRISPR-Cas9. **2017**, 6, 1351-1358		58
763	Genome Reduction and Microbe-Host Interactions Drive Adaptation of a Sulfur-Oxidizing Bacterium Associated with a Cold Seep Sponge. **2017**, 2,		23
762	Evaluation and rational design of guide RNAs for efficient CRISPR/Cas9-mediated mutagenesis in Ciona. **2017**, 425, 8-20		38
761	Genetic engineering of a temperate phage-based delivery system for CRISPR/Cas9 antimicrobials against Staphylococcus aureus. **2017**, 7, 44929		69
760	Precision Genome Editing for Systems Biology A Temporal Perspective. **2017**, 367-392		
759	Methods for decoding Cas9 protospacer adjacent motif (PAM) sequences: A brief overview. **2017**, 121-122, 3-8		15
758	CRISPR-Cas: Adapting to change. *Science*, **2017**, 356,	33.3	223
757	Genome editing approaches: manipulating of lovastatin and taxol synthesis of filamentous fungi by CRISPR/Cas9 system. **2017**, 101, 3953-3976		42
756	Gene editing as applied to prevention of reproductive porcine reproductive and respiratory syndrome. **2017**, 84, 926-933		18
755	Draft Genome Sequences of Six Strains of from Serotypes 5, 6A, 6B, 18C, 19A, and 23F. **2017**, 5,		1
754	Gene Therapy 2017: Progress and Future Directions. **2017**, 10, 242-248		89
753	Regulation of CRISPR-Cas adaptive immune systems. **2017**, 37, 1-7		43
752	CRISPR-Cas systems exploit viral DNA injection to establish and maintain adaptive immunity. **2017**, 544, 101-104		96

751	CRISPR-Cas9 Structures and Mechanisms. **2017**, 46, 505-529	732
750	CRISPR-Cas9: From a bacterial immune system to genome-edited human cells in clinical trials. **2017**, 8, 280-286	16
749	Genetic analysis of Salmonella enterica serovar Gallinarum biovar Pullorum based on characterization and evolution of CRISPR sequence. **2017**, 203, 81-87	25
748	Functional interrogation of non-coding DNA through CRISPR genome editing. **2017**, 121-122, 118-129	19
747	Genome engineering for breaking barriers in lignocellulosic bioethanol production. **2017**, 74, 1080-1107	26
746	Microbial Ecology of Extreme Environments. **2017**,	3
745	Crenarchaeal Viruses of Hot Springs: Diversity, Ecology and Co-evolution. **2017**, 137-167	
744	Shifting Paradigm Towards the Crops: From Model Plants to Crops and Employing the Genome Engineering to Target Traits. **2021**, 511-535	0
743	Atomic-scale insights into allosteric inhibition and evolutional rescue mechanism of Cas9 by the anti-CRISPR protein AcrIIA6.. **2021**, 19, 6108-6124	10
742	Human-Induced Pluripotent Stem Cell-Based Models for Studying Sex-Specific Differences in Neurodegenerative Diseases.. **2021**,	1
741	Mammalian antiviral systems directed by small RNA.. **2021**, 17, e1010091	2
740	Towards application of CRISPR-Cas12a in the design of modern viral DNA detection tools (Review).. **2022**, 20, 41	7
739	How CRISPR/Cas9 Gene Editing Is Revolutionizing T Cell Research.. **2021**,	0
738	Methodologies in visualizing the activation of CRISPR/Cas: The last mile in developing CRISPR-Based diagnostics and biosensing - A review.. **2022**, 1205, 339541	1
737	Updates on CRISPR-based gene editing in HIV-1/AIDS therapy.. **2022**, 37, 1-1	1
736	RNA thermometers and other regulatory elements: Diversity and importance in bacterial pathogenesis.. **2022**, e1711	1
735	The CRISPR-Cas toolbox and gene editing technologies.. **2021**,	15
734	Gene-edited Fluorescent and Mixed Cerebral Organoids.. **2022**,	1

733	Modulating CRISPR-Cas genome editing using guide-complementary DNA oligonucleotides.	
732	The Application of CRISPR/Cas9 Technology for Cancer Immunotherapy: Current Status and Problems.. **2021**, 11, 704999	0
731	Zastosowanie technologii CRISPR/Cas9 w leczeniu nowotworów. **2021**, 18, 92-98	
730	Application of Bacteriophages to Limit in Poultry Production.. **2021**, 12, 458721	2
729	A quantitative model for the dynamics of target recognition and off-target rejection by the CRISPR-Cas Cascade complex.	0
728	The structure of AcrIE4-F7 reveals a common strategy for dual CRISPR inhibition by targeting PAM recognition sites.. **2022**,	0
727	Targeting Cancer with CRISPR/Cas9-Based Therapy.. **2022**, 23,	0
726	CRISPR/Cas: The New Frontier in Plant Improvement.	1
725	Different modes of spacer acquisition by the Staphylococcus epidermidis type III-A CRISPR-Cas system.. **2022**,	2
724	Computational Prediction of Bacteriophage Host Ranges.. **2022**, 10,	2
723	Distribution, Diversity and Roles of CRISPR-Cas Systems in Human and Animal Pathogenic Streptococci.. **2022**, 13, 828031	0
722	Toward improved terpenoids biosynthesis: strategies to enhance the capabilities of cell factories. **2022**, 9,	0
721	Real-time precision opto-control of chemical processes in live cells.	
720	CS-Cells: A CRISPR-Cas12 DNA Device to Generate Chromosome-Shredded Cells for Efficient and Safe Molecular Biomanufacturing.. **2022**,	0
719	Double nicking by RNA-directed Cascade-nCas3 for high-efficiency large-scale genome engineering.. **2022**, 12, 210241	1
718	Classification of CRISPR/Cas system and its application in tomato breeding.. **2022**, 135, 367	1
717	An Introduction to Genome Editing Techniques. **2022**, 1-28	
716	An introduction to advanced technologies in synthetic biology. **2022**, 1-9	

715	Molecular basis of transcriptional repression of anti-CRISPR by anti-CRISPR-associated 2.. **2022**, 78, 59-68	0
714	CRISPR Technology in Cancer Diagnosis and Treatment: Opportunities and Challenges.. **2022**, 1	1
713	How to Find the Right RNA-Sensing CRISPR-Cas System for an Application.. **2022**, 12,	0
712	Strategies for Enhancing the Homology-directed Repair Efficiency of CRISPR-Cas Systems.. **2022**,	1
711	Bacteriostatic antibiotics promote CRISPR-Cas adaptive immunity by enabling increased spacer acquisition.. **2021**,	5
710	CRISPR/Cas9 teknolojisi ve g□da alan□da kullan□m□	
709	CRISPR ERA: Current Applications and Future Perspectives on Actinobacteria. **2022**, 181-202	
708	CRISPR/Cas genome-editing toolkit to enhance salt stress tolerance in rice and wheat.. **2022**, e13642	5
707	Advances and application of CRISPR-Cas systems. **2022**, 331-348	
706	Advances in engineering of bacteriophages for therapeutic applications. **2022**, 215-229	
705	Application of CRISPR/Cas system in iPSC-based disease model of hereditary deafness. **2022**, 225-245	
704	Direct MYD88 gene detection for diffuse large B-cell lymphoma (DLBCL) a miniaturised CRISPR/dCas9-based sensing chip.. **2022**,	1
703	Advances in the Development of Phage-Based Probes for Detection of Bio-Species.. **2022**, 12,	5
702	Research Trends and Challenges of Using CRISPR/Cas9 for Improving Rice Productivity. **2022**, 12, 164	0
701	A TXTL-Based Assay to Rapidly Identify PAMs for CRISPR-Cas Systems with Multi-Protein Effector Complexes.. **2022**, 2433, 391-411	0
700	Oral Microbiome: An Opening to Healthy Possibilities. **2022**, 27-54	
699	Past, present and future of ICSI in livestock species.. **2022**, 106925	1
698	Turning CRISPR on with antibiotics.. **2022**, 30, 12-14	

697	Sumoylation of Cas9 at lysine 848 regulates protein stability and DNA binding.. **2022**, 5,	1
696	Tools for engineering resistance against pathogens in plants. 1	1
695	Cas11 enables genome engineering in human cells with compact CRISPR-Cas3 systems.. **2022**,	2
694	New Frontiers: Precise Editing of Allergen Genes Using CRISPR.. **2021**, 2, 821107	0
693	Structural basis of cyclic oligoadenylate binding to the transcription factor Csa3 outlines crosstalk between Type-III & Type-I CRISPR systems.. **2022**, 101591	1
692	Mechanistic insights into the inhibition of the CRISPR-Cas Surveillance Complex by anti-CRISPR protein AcrIF13.. **2022**, 101636	0
691	Antimicrobial Usage for the Management of Mastitis in the USA: Impacts on Antimicrobial Resistance and Potential Alternative Approaches.	1
690	Improvement of Soybean; A Way Forward Transition from Genetic Engineering to New Plant Breeding Technologies.. **2022**,	2
689	A review on colorimetric assays for DNA virus detection.. **2022**, 301, 114461	0
688	CRISPR/Cas9-mediated generation of auxotrophic Edwardsiella piscicida mutants and immunization in olive flounder (Paralichthys olivaceus).. **2022**, 122, 98-105	
687	Anti-CRISPR proteins as a therapeutic agent against drug-resistant bacteria.. **2022**, 257, 126963	1
686	Recent advances in production of bioenergy carrying molecules, microbial fuels, and fuel design - A review. **2022**, 316, 123330	2
685	Synthetic biology tools: Engineering microbes for biotechnological applications. **2022**, 369-398	
684	Discovery of potent and versatile CRISPR-Cas9 inhibitors engineered for chemically controllable genome editing.. **2022**,	1
683	gen. nov., sp. nov., a novel actinobacterial strain isolate from a Portuguese solar saltern and proposal of fam. nov. and ord. nov.. **2022**, 72,	0
682	A Simple and Highly Sensitive Naked-Eye Analysis of EGFR 19del via CRISPR/Cas12a Triggered No-Nonspecific Nucleic Acid Amplification.. **2022**,	1
681	Phage Genome Diversity in a Biogas-Producing Microbiome Analyzed by Illumina and Nanopore GridION Sequencing.. **2022**, 10,	1
680	Introducing Large Genomic Deletions in Human Pluripotent Stem Cells Using CRISPR-Cas3.. **2022**, 2, e361	0

679	Cleavage of viral DNA by restriction endonucleases stimulates the type II CRISPR-Cas immune response.. **2022**,	1
678	Efficient CRISPR Mutagenesis in Sturgeon Demonstrates Its Utility in Large, Slow-Maturing Vertebrates.. **2022**, 10, 750833	0
677	CRISPR Approaches for the Diagnosis of Human Diseases.. **2022**, 23,	1
676	Current approaches in CRISPR-Cas9 mediated gene editing for biomedical and therapeutic applications.. **2022**,	5
675	Unique properties of spacer acquisition by the type III-A CRISPR-Cas system. **2021**,	2
674	Amycolatopsis sp. nov., a Halotolerant Actinobacterium, Produces New Secondary Metabolites.. **2021**, 12, 743116	2
673	Inconclusive studies on possible CRISPR-Cas off-targets should moderate expectations about enzymes that have evolved to be non-specific. **2018**, 43, 225-228	1
672	Restriction enzymes and their use in molecular biology: An overview. **2019**, 44,	2
671	Advancement in Nanomaterial Synthesis and its Biomedical Applications. **2022**, 419-462	
670	Gene Editing Through CRISPR-Based Technology. **2022**, 23-92	
669	Mechanisms of stress adaptation by bacterial communities. **2022**, 247-258	0
668	Drug Targeting. **2022**,	
667	Genome Editing in Polyploid Brassica Crops. **2022**, 471-491	
666	Development and Vision of CRISPR-Based Technology. **2022**, 1-22	
665	An efficient and specific CRISPR-Cas9 genome editing system targeting soybean phytoene desaturase genes.. **2022**, 22, 7	3
664	Current applications and future perspective of CRISPR/Cas9 gene editing in cancer.. **2022**, 21, 57	7
663	Metal Dependence and Functional Diversity of Type I Cas3 Nucleases.. **2022**,	0
662	Considerations and practical implications of performing a phenotypic CRISPR/Cas survival screen.. **2022**, 17, e0263262	1

661	Systematic Investigation of the Effects of Multiple SV40 Nuclear Localization Signal Fusion on the Genome Editing Activity of Purified SpCas9.. **2022**, 9,	0
660	Distribution of CRISPR in Isolated from Bulk Tank Milk and Its Potential Relationship with Virulence.. **2022**, 12,	0
659	In Silico Prediction and Selection of Target Sequences in the SARS-CoV-2 RNA Genome for an Antiviral Attack.. **2022**, 14,	1
658	CRISPR-Cas9 Gene Therapy for Duchenne Muscular Dystrophy.. **2022**, 1	5
657	CRISPR in cancer biology and therapy.. **2022**,	11
656	??CRISPR/Cas9????????β-??????????. **2022**,	0
655	Creating memories: molecular mechanisms of CRISPR adaptation.. **2022**,	1
654	The era of Cas12 and Cas13 CRISPR-based disease diagnosis.. **2022**, 1-16	1
653	Exploring nano-enabled CRISPR-Cas-powered strategies for efficient diagnostics and treatment of infectious diseases.. **2022**, 1-32	5
652	Precision Genome Editing Toolbox: Applications and Approaches for Improving Rice Genetic Resistance to Pathogens. **2022**, 12, 565	3
651	A Bacterial Dynamin-Like Protein Confers a Novel Phage Resistance Strategy on the Population Level in Bacillus subtilis.. **2022**, e0375321	0
650	Genome Editing in Cellular Disease Models. **2022**, 75-91	
649	Spacer prioritization in CRISPR-Cas9 immunity is enabled by the leader RNA.. **2022**,	0
648	Generating minimum set of gRNA to cover multiple targets in multiple genomes with MINORg.	
647	CRISPR/Cas13 effectors have differing extents of off-target effects that limit their utility in eukaryotic cells.. **2022**,	5
646	Phage peptides mediate precision base editing with focused targeting window.. **2022**, 13, 1662	0
645	CRISPR-Cas gene editing technology and its application prospect in medicinal plants.. **2022**, 17, 33	1
644	Targeted intracellular delivery of Cas13 and Cas9 nucleases using bacterial toxin-based platforms.. **2022**, 38, 110476	1

643	Rethinking Protein Drug Design with Highly Accurate Structure Prediction of Anti-CRISPR Proteins.. **2022**, 15,	0
642	Imaging of Hepatitis B Virus Nucleic Acids: Current Advances and Challenges.. **2022**, 14,	1
641	Highly specific chimeric DNA-RNA-guided genome editing with enhanced CRISPR-Cas12a system.. **2022**, 28, 353-362	0
640	Ribitol-Containing Wall Teichoic Acid of Tetragenococcus halophilus Is Targeted by Bacteriophage phiWJ7 as a Binding Receptor.. **2022**, e0033622	1
639	CRISPR-Cas9 gRNA efficiency prediction: an overview of predictive tools and the role of deep learning.. **2022**,	4
638	Cas13d: A New Molecular Scissor for Transcriptome Engineering.. **2022**, 10, 866800	5
637	Historical Overview of Genome Editing from Bacteria to Higher Eukaryotes. **2022**, 9-17	
636	Evolution of CRISPR-associated Endonucleases as Inferred from Resurrected Proteins.	0
635	Review CRISPR/Cas Systems: Endless Possibilities for Electrochemical Nucleic Acid Sensors. **2022**, 169, 037522	2
634	Visual Identification and Serotyping of Toxigenic Serogroups O1 and O139 With CARID.. **2022**, 12, 863435	0
633	New Advances of CRISPR/Cas9 Technique and Its Application in Disease Treatment and Medicinal Plants Research.. **2022**,	
632	Application of CRISPR/Cas9 in Rapeseed for Gene Function Research and Genetic Improvement. **2022**, 12, 824	0
631	Development of Cas12a-Based Cell-Free Small-Molecule Biosensors via Allosteric Regulation of CRISPR Array Expression.. **2022**,	1
630	A high-quality reference genome for the fish pathogen .. **2022**, 8,	
629	CRISPR-Cas System: An Adaptive Immune System's Association with Antibiotic Resistance in Salmonella enterica Serovar Enteritidis.. **2022**, 2022, 9080396	1
628	Allosteric activation of CRISPR-Cas12a requires the concerted movement of the bridge helix and helix 1 of the RuvC II domain.	0
627	Editorial: The CRISPR/Cas System in Pathogen Resistance, Virulence, Diagnosis and Typing.. **2022**, 13, 832152	
626	Progress of CRISPR-Cas13 Mediated Live-Cell RNA Imaging and Detection of RNA-Protein Interactions.. **2022**, 10, 866820	0

625	POLYMER-BASED TRANSFECTION AGENTS USED IN CRISPR-CAS9 SYSTEM.	
624	Strategies to overcome the main challenges of the use of CRISPR/Cas9 as a replacement for cancer therapy.. **2022**, 21, 64	3
623	Reprogramming the endogenous type I CRISPR-Cas system for simultaneous gene regulation and editing in Haloarcula hispanica. **2022**, 1, 40-50	1
622	RNA-targeting CRISPR-Cas13 Provides Broad-spectrum Phage Immunity.	0
621	New Insights for Biosensing: Lessons from Microbial Defense Systems.. **2022**,	3
620	Comparative Structural and Dynamics Study of Free and gRNA-bound FnCas9 and SpCas9 Proteins.	
619	Nanoparticles-mediated CRISPR/Cas gene editing delivery system.. **2022**,	1
618	Mechanisms of interactions between bacteria and bacteriophage mediate by quorum sensing systems.. **2022**, 106, 2299	4
617	CRISPR-Cas9 treatment partially restores amyloid-42/40 in human fibroblasts with the Alzheimer's disease M146L mutation.. **2022**, 28, 450-461	1
616	KPT330 improves Cas9 precision genome- and base-editing by selectively regulating mRNA nuclear export.. **2022**, 5, 237	1
615	CRISPR Cas. **2022**, 19-46	
614	CRISPRedict: The case for simple and interpretable efficiency prediction for CRISPR-Cas9 gene editing.	0
613	Persistence of plasmids targeted by CRISPR interference in bacterial populations.. **2022**, 119, e2114905119	
612	Development and Application of CRISPR-Cas Based Tools.. **2022**, 10, 834646	2
611	Nanotechnological interventions of the microbiome as a next-generation antimicrobial therapy.. **2022**, 155085	1
610	The RNA-RNA interactome between a phage and its satellite virus reveals a small RNA differentially regulates gene expression across both genomes.	
609	Genetics Matters: Voyaging from the Past into the Future of Humanity and Sustainability.. **2022**, 23,	0
608	Bacterial origins of human cell-autonomous innate immune mechanisms.. **2022**,	6

607	Designing electrospun fiber platforms for efficient delivery of genetic material and genome editing tools.. **2022**, 114161	1
606	Targeted Gene Mutations in the Forest Pathogen Using CRISPR/Cas9.. **2022**, 11,	1
605	CRISPR-Cas13a cascade-based viral RNA assay for detecting SARS-CoV-2 and its mutations in clinical samples.. **2022**, 362, 131765	2
604	Phenotypic and genetic analyses of two Campylobacter fetus isolates from a patient with relapsed prosthetic valve endocarditis.. **2021**,	0
603	CRISPR-to-Kill (C2K)-Employing the Bacterial Immune System to Kill Cancer Cells.. **2021**, 13,	0
602	Self-targeting spacers in CRISPR-array: Accidental occurrence or evolutionarily conserved phenomenon.. **2021**,	0
601	A naturally DNase-free CRISPR-Cas12c enzyme silences gene expression.	0
600	Multiplexed CRISPR-mediated engineering of protein secretory pathway genes in the thermotolerant methylotrophic yeast Ogataea thermomethanolica.. **2021**, 16, e0261754	0
599	Highly Valuable Polyunsaturated Fatty Acids from Microalgae: Strategies to Improve Their Yields and Their Potential Exploitation in Aquaculture.. **2021**, 26,	3
598	Harnessing tissue-specific genome editing in plants through CRISPR/Cas system: current state and future prospects.. **2021**, 255, 28	1
597	Mechanistic insights into the versatile class II CRISPR toolbox.. **2021**,	1
596	Cytosolic Self-DNA-A Potential Source of Chronic Inflammation in Aging.. **2021**, 10,	1
595	The Potential of CRISPR/Cas9 Gene Editing as a Treatment Strategy for Inherited Diseases.. **2021**, 9, 699597	2
594	Genome Editing among Bioethics and Regulatory Practices.. **2021**, 12,	0
593	Spontaneous Phage Resistance in Avian Pathogenic .. **2021**, 12, 782757	0
592	Engineered CRISPR-Cas systems for the detection and control of antibiotic-resistant infections. **2021**, 19, 401	5
591	Gene editing and its applications in biomedicine.. **2022**, 65, 660	3
590	Therapeutic Applications of CRISPR/Cas9 Technology for Infectious Diseases. **2022**, 557-573	

589	Mobile CRISPR-Cas9 based anti-phage system in .. **2022**, 1-9	2
588	Computational normal mode analysis accurately replicates the activity and specificity profiles of CRISPR-Cas9 and high-fidelity variants.. **2022**, 20, 2013-2019	0
587	CRISPR-Cas9 bends and twists DNA to read its sequence.. **2022**, 29, 395-402	4
586	Genome Editing: A Promising Approach for Achieving Abiotic Stress Tolerance in Plants.. **2022**, 2022, 5547231	1
585	Cas1 and Fen1 Display Equivalent Functions During Archaeal DNA Repair.. **2022**, 13, 822304	0
584	Adaptation by Type III CRISPR-Cas Systems: Breakthrough Findings and Open Questions.. **2022**, 13, 876174	1
583	CRISPR-Based Genome Editing: Advancements and Opportunities for Rice Improvement.. **2022**, 23,	2
582	The power of unbiased phenotypic screens - cellulose as a first receptor for the Schitoviridae phage S6 of Erwinia amylovora.. **2022**,	0
581	DataSheet_1.docx. **2020**,	
580	Image_1.PDF. **2018**,	
579	Table_1.XLSX. **2018**,	
578	Table_2.XLSX. **2018**,	
577	Table_3.xlsx. **2018**,	
576	Table_1.pdf. **2020**,	
575	Table_2.xlsx. **2020**,	
574	Table_1.docx. **2020**,	
573	Image_1.PDF. **2018**,	
572	Presentation_1.pptx. **2019**,	

571 Table_1.XLSX. **2019**,

570 Data_Sheet_1.pdf. **2018**,

569 Table_1.DOCX. **2018**,

568 Data_Sheet_1.PDF. **2018**,

567 Video_1.AVI. **2018**,

566 Video_2.AVI. **2018**,

565 Data_Sheet_1.docx. **2019**,

564 Table_1.XLSX. **2019**,

563 Table_2.XLSX. **2019**,

562 Data_Sheet_1.xlsx. **2019**,

561 Data_Sheet_2.xlsx. **2019**,

560 Data_Sheet_3.xlsx. **2019**,

559 Data_Sheet_4.XLSX. **2019**,

558 Data_Sheet_5.XLSX. **2019**,

557 Data_Sheet_6.XLSX. **2019**,

556 Table_1.XLSX. **2020**,

555 Table_2.XLSX. **2020**,

554 Table_3.XLSX. **2020**,

553 Table_4.DOCX. **2020**,

552 Image_1.TIF. **2019**,

551 Image_2.TIF. **2019**,

550 Table_1.XLSX. **2019**,

549 Data_Sheet_1.docx. **2019**,

548 Data_Sheet_1.ZIP. **2019**,

547 Data_Sheet_2.docx. **2019**,

546 Data_Sheet_3.xlsx. **2019**,

545 Image_1.TIF. **2020**,

544 Table_1.XLS. **2020**,

543 Data_Sheet_1.PDF. **2020**,

542 Table_1.xlsx. **2020**,

541 Data_Sheet_1.PDF. **2020**,

540 Data_Sheet_2.PDF. **2020**,

539 Data_Sheet_3.PDF. **2020**,

538 Data_Sheet_4.PDF. **2020**,

537 Data_Sheet_1.pdf. **2020**,

536 Data_Sheet_2.PDF. **2020**,

535 Table_1.DOCX. **2020**,

534 Table_2.DOCX. **2020**,

533 Table_3.DOCX. **2020**,

532 Table_1.docx. **2020**,

531 Data_Sheet_1.docx. **2019**,

530 Data_Sheet_1.docx. **2020**,

529 Image_1.TIF. **2020**,

528 Image_2.TIF. **2020**,

527 Data_Sheet_1.PDF. **2020**,

526 Table_1.DOCX. **2020**,

525 Table_2.xls. **2020**,

524 Data_Sheet_1.DOCX. **2018**,

523 Image_1.pdf. **2018**,

522 Image_1.TIF. **2020**,

521 Table_1.xlsx. **2020**,

520 Table_2.xlsx. **2020**,

519 Table_3.xlsx. **2020**,

518 Presentation_1.pptx. **2018**,

517 Table_1.docx. **2018**,

516 Table_2.docx. **2018**,

515 Table_1.XLSX. **2019**,

514 Data_Sheet_1.xlsx. **2021**,

513 Data_Sheet_2.docx. **2021**,

512 Data_Sheet_1.PDF. **2020**,

511 Data_Sheet_2.PDF. **2020**,

510 Data_Sheet_3.PDF. **2020**,

509 Data_Sheet_1.CSV. **2019**,

508 Table_1.XLSX. **2019**,

507 Table_2.XLSX. **2019**,

506 Data_Sheet_1.FASTA. **2018**,

505 Data_Sheet_2.FASTA. **2018**,

504 Data_Sheet_3.FASTA. **2018**,

503 Data_Sheet_1.pdf. **2020**,

502 Type III CRISPR-Cas Systems and the Roles of CRISPR-Cas in Bacterial Virulence. **2013**, 201-219

501 CRISPR/Cas9-Mediated Genome Editing System in Insect Genomics and Pest Management. **2022**, 2360, 347-366

500 Single cell variability of CRISPR-Cas interference and adaptation.. **2022**, 18, e10680 1

499 Ruminal Phages - A Review.. **2021**, 12, 763416 0

498 Reconstitution and biochemical characterization of the RNA-guided helicase-nuclease protein Cas3 from type I-A CRISPR□as system. **2022**,

497 Comparative genomics in probiotic bacteria. **2022**, 245-278

496 Recent advances for cancer detection and treatment by microfluidic technology, review and update.. **2022**, 24, 5 2

495 Engineered probiotics.. **2022**, 21, 72 2

494 Cytokinins: A Genetic Target for Increasing Yield Potential in the CRISPR Era.. **2022**, 13, 883930 2

493 Molecular Therapies for Myotonic Dystrophy Type 1: From Small Drugs to Gene Editing.. **2022**, 23, 0

492 Type I-E CRISPR-Cas System as a Defense System in Saccharomyces cerevisiae.. **2022**, e0003822

491 Mimiviruses: Giant viruses with novel and intriguing features (Review).. **2022**, 25,

490 CRISPR/Cas9 Technology and Its Application in Horticultural Crops. **2022**, 1

489 Identifying candidate structured RNAs in CRISPR operons.. **2022**, 19, 678-685

488 Two types of bacteriophage-modified alginate hydrogels as antibacterial coatings for implants. **2022**, 134, 104353 0

487 Advance of Clustered Regularly Interspaced Short Palindromic Repeats-Cas9 System and Its Application in Crop Improvement. **2022**, 13, 1

486 Role of Antimicrobial Drug in the Development of Potential Therapeutics.. **2022**, 2022, 2500613 1

485 Gene therapy for Fibrodysplasia Ossificans Progressiva (FOP): feasibility and obstacles.. **2022**, 0

484 Recent advances on DNA and omics-based technology in Food testing and authentication: A review. 0

483 CRISPR/Cas9 application in cancer therapy: a pioneering genome editing tool.. **2022**, 27, 35 2

482 Structural biology of CRISPR-Cas immunity and genome editing enzymes.. **2022**, 1

481	Genome editing and cancer: How far has research moved forward on CRISPR/Cas9?. **2022**, 150, 113011	0
480	A CRISPR View of Hematopoietic Stem Cells: Moving Innovative Bioengineering into the Clinic.. **2022**,	0
479	A dual conditional CRISPR-Cas9 system to activate gene editing and reduce off-target effects in human stem cells. **2022**, 28, 656-669	0
478	Marine cyanobacteria in the anthropocene: Are top-down paradigms robust to climate change?. **2022**, 3, 100057	0
477	Hydrogen Peroxide-triggered Chemical Strategy for Controlling CRISPR systems.. **2022**,	0
476	RNA Interference for Improving Disease Resistance in Plants and Its Relevance in This Clustered Regularly Interspaced Short Palindromic Repeats-Dominated Era in Terms of dsRNA-Based Biopesticides. **2022**, 13,	1
475	CRISPR/Cas technology for improving nutritional values in the agricultural sector: an update.. **2022**, 1	0
474	Decrypting the mechanistic basis of CRISPR/Cas9 protein.. **2022**,	0
473	CRISPR-Cas-mediated diagnostics. **2022**,	0
472	Impacts of restriction-modification systems on pan-epigenome dynamics and genome plasticity.. **2022**, 8,	
471	Cas9 Nickase-Based Genome Editing in Clostridium cellulolyticum.. **2022**, 2479, 227-243	
470	A truncated anti-CRISPR protein prevents spacer acquisition but not interference.. **2022**, 13, 2802	0
469	CRISPR: Genome Editing and Beyond. **2022**, 167-180	
468	Pre-clinical non-viral vectors exploited for in vivo CRISPR/Cas9 gene editing: an overview.	0
467	CrisprVi: a software for visualizing and analyzing CRISPR sequences of prokaryotes. **2022**, 23,	
466	Run-on sequencing reveals nascent transcriptomics of the human microbiome.	
465	Comparative Genomics of Lactiplantibacillus plantarum: Insights Into Probiotic Markers in Strains Isolated From the Human Gastrointestinal Tract and Fermented Foods. **2022**, 13,	0
464	Ultrasensitive fluorescent biosensor for detecting CaMV 35S promoter with proximity extension mediated multiple cascade strand displacement amplification and CRISPR/Cpf 1. **2022**, 1215, 339973	0

463	Tetrahedral framework nucleic acids linked CRISPR/Cas13a signal amplification system for rare tumor cell detection. **2022**, 247, 123531	0
462	A programmable and sensitive CRISPR/Cas12a-based MicroRNA detection platform combined with hybridization chain reaction. **2022**, 211, 114382	2
461	Resistance to Phages, Part II: Bacteria Live!. **2022**, 217-229	
460	CRISPR-Based Genome-Editing Tools for Huntington□ Disease Research and Therapy.	
459	Long-Term Interactions of Salmonella Enteritidis With a Lytic Phage for 21 Days in High Nutrients Media. **2022**, 12,	1
458	Next-Generation Diagnostic with CRISPR/Cas: Beyond Nucleic Acid Detection. **2022**, 23, 6052	1
457	Ingestion of single guide RNAs induces gene overexpression and extends lifespan in C. elegans via CRISPR activation. **2022**, 102085	0
456	Structural rearrangements allow nucleic acid discrimination by type I-D Cascade. **2022**, 13,	1
455	CRISPR base editing of cis-regulatory elements enables target gene perturbations.	
454	CRISPR-Cas9: el debate bio□ico m□ all□de la l□nea germinal. **2022**, 25, 1-18	
453	Anti-CRISPR prediction using deep learning reveals an inhibitor of Cas13b nucleases. **2022**,	0
452	CRISPR-Cas effector specificity and target mismatches determine phage escape outcomes.	
451	CRISPR-Cas provides limited phage immunity to a prevalent gut bacterium in gnotobiotic mice.	0
450	High Frequency of Dynamic Rearrangements In Crispr loci.	0
449	PAM binding ensures orientational integration during Cas4-Cas1-Cas2 mediated CRISPR adaptation.	0
448	A naturally DNase-free CRISPR-Cas12c enzyme silences gene expression. **2022**, 82, 2148-2160.e4	0
447	A versatile CRISPR Cas12a-based point-of-care biosensor enabling convenient glucometer readout for ultrasensitive detection of pathogen nucleic acids. **2022**, 123657	1
446	A scaling law in CRISPR repertoire sizes arises from the avoidance of autoimmunity. **2022**,	1

445	Comparative Genomics Provides Insights Into Genetic Diversity of Clostridium tyrobutyricum and Potential Implications for Late Blowing Defects in Cheese. **2022**, 13,	
444	A Mutated Nme1Cas9 Is a Functional Alternative RNase to Both LwaCas13a and RfxCas13d in the Yeast S. cerevisiae. **2022**, 10,	1
443	The fluorescence amplification strategy based on 3D DNA walker and CRISPR/Cas12a for the rapid detection of BRAF V600E.	0
442	Rapid RNA detection through intra-enzyme chain replacement-promoted Cas13a cascade cyclic reaction without amplification. **2022**, 1217, 340009	0
441	Recent Advances and Use of Tools for Functional Foods and Nutraceuticals. **2022**, 331-351	
440	The DNA-Cu nanocluster and exonuclease I integrated label-free reporting system for CRISPR/Cas12a-based SARS-CoV-2 detection with minimized background signal.	0
439	Crystal structure of the BREX phage defence protein BrxA. **2022**, 4, 211-219	0
438	Advances of genetic engineering in Streptococci and Enterococci.	0
437	Precise Transcript Targeting by CRISPR-Csm Complexes.	0
436	Structural and mechanistic insights into the inhibition of type I-F CRISPR-Cas system by anti-CRISPR protein AcrIF23. **2022**, 102124	0
435	Insertion-and-Deletion Mutations between the Genomes of SARS-CoV, SARS-CoV-2, and Bat Coronavirus RaTG13.	0
434	Understanding on CRISPR/Cas9 mediated cutting-edge approaches for cancer therapeutics. **2022**, 13,	
433	Detection of Ancient Viruses and Long-Term Viral Evolution. **2022**, 14, 1336	1
432	Improvements in pig agriculture through gene editing. **2022**, 3,	0
431	A target expression threshold dictates invader defense and prevents autoimmunity by CRISPR-Cas13. **2022**,	0
430	CRISPR-Cas9-Based Technology and Its Relevance to Gene Editing in Parkinson Disease. **2022**, 14, 1252	2
429	Application of CRISPR-Mediated Gene Editing for Crop Improvement.	2
428	Cardiac Xenotransplantation. **2022**,	0

427	Challenges and opportunities when transitioning from in vivo gene replacement to in vivo CRISPR/Cas9 therapies a spotlight on hemophilia. 1-8	0
426	Assembly of multi-subunit fusion proteins into the RNA-targeting type III-D CRISPR-Cas effector complex.	
425	Genomic analysis of a novel active prophage of Hafnia paralvei.	
424	Tools and targets: The dual role of plant viruses in CRISPR Cas genome editing.	3
423	Sensitive and high-accuracy detection of Salmonella based on CRISPR /Cas12a combined with recombinase polymerase amplification.	
422	CRISPR/Cas9 System: A Potential Tool for Genetic Improvement in Floricultural Crops.	1
421	Structures of an active type III-A CRISPR effector complex. **2022**,	1
420	Comparative Analysis of Transcriptomes of Ophiostoma novo-ulmi ssp. americana Colonizing Resistant or Sensitive Genotypes of American Elm. **2022**, 8, 637	0
419	Genome-wide CRISPR-Cas9 screening and identification of potential genes promoting prostate cancer growth and metastasis.. **2022**, 22,	1
418	CRISPR-Cas-Systeme der Klasse 1: Genome Engineering und Silencing. **2022**, 28, 370-373	
417	Origin of the genome editing systems: application for crop improvement.	
416	Genome edited wheat- current advances for the second green revolution. **2022**, 60, 108006	0
415	Expanding Horizons: Role of Biotechnology in MAP Research, Production and Utilization. **2022**, 237-275	
414	Biotechnology in Medicine: Fundamentals. **2022**, 21-65	
413	Novel Nanotechnology-Based Vector Delivery in CRISPR System for Transgene-Free Editing. **2022**, 279-294	
412	The Mechanisms of Genome Editing Technologies in Crop Plants. **2022**, 295-313	
411	Cisgenic Crops: Major Strategies to Create Cisgenic Plants Based on Genome Editing. **2022**, 213-235	1
410	Cisgenesis in the Era of Genome Editing and Modern Plant Biotechnology. **2022**, 257-279	1

409	Cell-Based Therapy and Genome Editing in Parkinson's Disease: Quo Vadis?. **2022**, 35-61	
408	Dutch elm disease. **2022**, 291-309	
407	Genetic transformation via plant tissue culture techniques: Current and future approaches. **2022**, 131-156	
406	CRISPR/Cas9 applications for improvement of soybeans, current scenarios, and future perspectives. **2022**, 50, 12678	0
405	Gene Therapy in Orthopaedics: Progress and Challenges in Pre-Clinical Development and Translation. 10,	1
404	Characterization of a thermostable Cas13 enzyme for one-pot detection of SARS-CoV-2. **2022**, 119,	1
403	Technical considerations towards commercialization of porcine respiratory and reproductive syndrome (PRRS) virus resistant pigs. **2022**, 3,	1
402	Use Of Crispr In Infection Control. **2022**, 23,	
401	Nutrition as primary prevention of communicable diseases?. **2022**, 67, 56-60	
400	Construction of CRISPR-Cas9 genome editing platform for white-rot fungus Cerrena unicolor BBP6 and its effects on extracellular ligninolytic enzyme biosynthesis. **2022**, 185, 108527	0
399	Allosteric control of type I-A CRISPR-Cas3 complexes and establishment as effective nucleic acid detection and human genome editing tools. **2022**,	1
398	Comparative Genomic Analysis of the Human Pathogen Wohlfahrtiimonas Chitiniclastica Provides Insight Into the Identification of Antimicrobial Resistance Genotypes and Potential Virulence Traits. 12,	
397	Application of Gene Editing Technology in Resistance Breeding of Livestock. **2022**, 12, 1070	0
396	Transcriptional Activation of Biosynthetic Gene Clusters in Filamentous Fungi. 10,	2
395	CRISPR-Cas-based detection for food safety problems: Current status, challenges, and opportunities.	5
394	Gene Editing to Tackle Facioscapulohumeral Muscular Dystrophy. 4,	
393	Progress of delivery methods for CRISPR-Cas9. 1-14	1
392	Development and application of CRISPR -based genetic tools in Bacillus species and Bacillus phages.	0

391	Building pyramids against the evolutionary emergence of pathogens.	
390	Phenotype-genotype analysis of Latilactobacills curvatus from different niches: carbohydrate metabolism, antibiotic resistance, bacteriocin, phage fragments and Linkages with CRISPR-Cas Systems. **2022**, 111640	1
389	Evolutionary Dynamics between Phages and Bacteria as a Possible Approach for Designing Effective Phage Therapies against Antibiotic-Resistant Bacteria. **2022**, 11, 915	0
388	Phage genome cleavage enables resuscitation from Cas13-induced bacterial dormancy.	1
387	Adaptation by Type V-A and V-B CRISPR-Cas Systems Demonstrates Conserved Protospacer Selection Mechanisms Between Diverse CRISPR-Cas Types.	
386	Natural killer cell awakening: unleash cancer-immunity cycle against glioblastoma. **2022**, 13,	3
385	Host Manipulation, Gene Editing, and Non-Traditional Model Organisms: A New Frontier for Behavioral Research?. 2,	0
384	In vivo Delivery Tools for Clustered Regularly Interspaced Short Palindromic Repeat/Associated Protein 9-Mediated Inhibition of Hepatitis B Virus Infection: An Update. 13,	
383	Current landscape of gene-editing technology in biomedicine: Applications, advantages, challenges, and perspectives. **2022**, 3,	0
382	PCDetection: PolyA-CRISPR/Cas12a-based miRNA detection without PAM restriction. **2022**, 214, 114497	1
381	CRISPR□as system and its use in the diagnosis of infectious diseases. **2022**, 263, 127100	0
380	A universal CRISPR/Cas12a-mediated AuNPs aggregation-based surface-enhanced Raman scattering (CRISPR/Cas-SERS) platform for virus gene detection. **2022**, 369, 132295	1
379	Genomic and epigenetic landscapes drive CRISPR-based genome editing in Bifidobacterium. **2022**, 119,	2
378	CRISPR Contributes to Adhesion, Invasion, and Biofilm Formation in Streptococcus agalactiae by Repressing Capsular Polysaccharide Production.	
377	Identification of Streptococcus infantarius subsp. infantarius as the species primarily responsible for acid production in Izmir Brined Tulum Cheese from the Aegean Region of T□kiye. **2022**, 111707	0
376	Genome-wide identification of type III effectors and other virulence factors in Ralstonia pseudosolanacearum causing bacterial wilt in ginger (Zingiber officinale).	0
375	Genogrouping of type II-A CRISPR array in Streptococcus dysgalactiae subsp. equisimilis from humans and companion animals compared to multilocus sequence and emm typing. **2022**,	
374	Modulating CRISPR-Cas Genome Editing Using Guide-Complementary DNA Oligonucleotides.	

373	CRISPR-Cas systems: role in cellular processes beyond adaptive immunity.	1
372	Fluxes of the Amazon River plume nutrients and microbes into marine sponges. **2022**, 157474	0
371	Disease Modeling of Pituitary Adenoma Using Human Pluripotent Stem Cells. **2022**, 14, 3660	0
370	Gene Editing and Rett Syndrome: Does It Make the Cut?.	
369	Epidemiological and evolutionary consequences of different types of CRISPR-Cas systems. **2022**, 18, e1010329	
368	Isolation and characterization of two novel phages as a possible therapeutic alternative against multi-drug resistant E. coli. **2022**, 28, 101644	0
367	Employment of the CRISPR/Cas9 system to improve cellulase production in Trichoderma reesei. **2022**, 60, 108022	0
366	Phage Therapy: Genomics to Applications and Future Prospects. **2022**, 109-145	0
365	Transcriptional analysis of CRISPR I-B arrays of Leptospira interrogans serovar Lai and its processing by Cas6. 13,	0
364	CRISPR□as9 Based Bacteriophage Genome Editing.	0
363	Recording gene expression order in DNA by CRISPR addition of retron barcodes. **2022**, 608, 217-225	0
362	New Hope for Genome Editing in Cultivated Grasses: CRISPR Variants and Application. 13,	0
361	Understanding floral biology for CRISPR-based modification of color and fragrance in horticultural plants. 11, 854	0
360	Genetic advancements in obesity management and CRISPR□as9-based gene editing system.	
359	Critical roles for □ousekeeping□ucleases in Type III CRISPR-Cas immunity.	0
358	CRISPR comparison toolkit (CCTK): Rapid identification, visualization, and analysis of CRISPR array diversity.	0
357	High throughput CRISPRi and CRISPRa technologies in 3D genome regulation for neuropsychiatric diseases.	
356	Complete gammaproteobacterial endosymbiont genome assembly from a seep tubeworm Lamellibrachia satsuma. **2022**, 60, 916-927	

355	The application and progression of CRISPR/Cas9 technology in ophthalmological diseases.	
354	A Polyketide Synthetase Gene Cluster is Responsible for Antibacterial Activity of Burkholderia contaminans MS14.	
353	CRISPR/Cas-Powered Biosensing.	
352	Isothermal Amplification Technology for Disease Diagnosis. **2022**, 12, 677	0
351	CRISPR-Cas in Acinetobacter baumannii Contributes to Antibiotic Susceptibility by Targeting Endogenous AbaI.	0
350	Precision targeting of food biofilm-forming genes by microbial scissors: CRISPR-Cas as an effective modulator. 13,	
349	Targeted suppression of human IBD-associated gut microbiota commensals by phage consortia for treatment of intestinal inflammation. **2022**, 185, 2879-2898.e24	11
348	Bioinformatics and its role in the study of the evolution and probiotic potential of lactic acid bacteria.	2
347	Comprehending the evolution of gene editing platforms for crop trait improvement. 13,	0
346	CRISPR in butterflies: An undergraduate lab experience to inactivate wing patterning genes during development.	
345	Microfluidics-Based POCT for SARS-CoV-2 Diagnostics. **2022**, 13, 1238	1
344	A novel fluorescence biosensor based on CRISPR/Cas12a integrated MXenes for detecting Aflatoxin B1. **2022**, 123773	2
343	Diversity and dynamics of the CRISPR-Cas systems associated with Bacteroides fragilis in human population. **2022**, 23,	
342	Clustered regularly interspaced short palindromic repeats-Cas system: diversity and regulation in Enterobacteriaceae.	
341	Recent Advances and Therapeutic Strategies Using CRISPR Genome Editing Technique for the Treatment of Cancer.	
340	An Overview: CRISPR/Cas-Based Gene Editing for Viral Vaccine Development.	
339	CRISPR-Cas system: from diagnostic tool to potential antiviral treatment.	0
338	In silico analysis reveals the co-existence of CRISPR-Cas type I-F1 and type I-F2 systems and its association with restricted phage invasion in Acinetobacter baumannii. 13,	

337	Structure-based evolutionary relationship between IscB and Cas9.	
336	Sensitive and rapid detection of Escherichia coli O157:H7 from beef sample based on recombinase aided amplification assisted CRISPR/Cas12a system.	0
335	CRISPR base editing of cis-regulatory elements enables the perturbation of neurodegeneration-linked genes. **2022**,	1
334	New Advances in Using Virus-like Particles and Related Technologies for Eukaryotic Genome Editing Delivery. **2022**, 23, 8750	
333	Modern physiology vindicates Darwin's dream.	0
332	Accumulation of defense systems drives panphage resistance in Pseudomonas aeruginosa.	0
331	Structural and functional insights into the type III-E CRISPR-Cas immunity.	0
330	Molecular basis of anti-CRISPR operon repression by Aca10. **2022**, 50, 8919-8928	0
329	A precise review on NAATs -based diagnostic assays for COVID -19: A motion in fast POC molecular tests.	0
328	Evaluation of the immunogenicity of auxotrophic Lactobacillus with CRISPR-Cas9D10A system-mediated chromosomal editing to express porcine rotavirus capsid protein VP4. **2022**, 13, 1315-1330	0
327	Competition and coevolution drive the evolution and the diversification of CRISPR immunity.	0
326	Targeted Modification of Mammalian DNA by a Novel Type V Cas12a Endonuclease from Ruminococcus bromii. **2022**, 23, 9289	
325	CRISPR /Cas-based tools for the targeted control of plant viruses.	2
324	CRISPR‐Cas9: A History of Its Discovery and Ethical Considerations of Its Use in Genome Editing. **2022**, 87, 777-788	0
323	Csb1 moonlighting gives rise to functional redundancy with Csb2 in processing the pre-CRISPR transcript in type I-G CRISPR-Cas system.	
322	High-resolution crystal structure of the anti-CRISPR protein AcrIC5. **2022**, 625, 102-108	0
321	CRISPR/Cas Systems-Inspired Nano/Biosensors for Detecting Infectious Viruses and Pathogenic Bacteria. 2200794	0
320	Live-cell imaging of genomic loci with Cas9 variants. 2100381	0

319	Computation empowers CRISPR discovery and technology. **2022**, 2, 533-535	0
318	CRISPR/Cas9 Technology and Its Utility for Crop Improvement. **2022**, 23, 10442	2
317	A concise review on development of probiotics from Lactobacillus using CRISPR-Cas technology of gene editing. **2022**, 1, 100099	0
316	A comprehensive review of COVID-19 detection techniques: From laboratory systems to wearable devices. **2022**, 149, 106070	1
315	Cascade-Cas3 facilitates high-accuracy genome engineering in Pseudomonas using phage-encoded homologous recombination. **2022**, 2, 100046	0
314	CRISPR/Cas12a-based fluorescence assay for the detection of acetylcholinesterase activity. **2022**, 372, 132691	0
313	A glucose/O2 biofuel cell as self-powered sensor for ultrasensitive microRNA detection based on CRISPR-Cas12a cleavage and duplex-specific nuclease-assisted target recycling. **2022**, 373, 132700	0
312	Miniature CRISPR-Cas12 endonucleases Programmed DNA targeting in a smaller package. **2022**, 77, 102466	0
311	New Directions for Epigenetics: Application of Engineered DNA-binding Molecules to Locus-specific Epigenetic Research. **2023**, 843-868	0
310	CRISPR Genome Editing Brings Global Food Security into the First Lane: Enhancing Nutrition and Stress Resilience in Crops. **2022**, 285-344	0
309	A synthetic biology approach to study carotenoid production in Corynebacterium glutamicum: Read-out by a genetically encoded biosensor combined with perturbing native gene expression by CRISPRi. **2022**, 383-419	0
308	A Need for Reverse Genetics to Study Coral Biology and Inform Conservation Efforts. **2022**, 167-178	0
307	Comparative structural and dynamics study of free and gRNA-bound FnCas9 and SpCas9 proteins. **2022**, 20, 4172-4184	0
306	Molecular Details of DNA Integration by CRISPR-Associated Proteins During Adaptation in Bacteria and Archaea. **2022**,	0
305	CRISPR-Cas Technology: A Genome-Editing Powerhouse for Molecular Plant Breeding. **2022**, 803-879	0
304	BEtarget: A versatile web-based tool to design guide RNAs for base editing in plants. **2022**, 20, 4009-4014	0
303	Editing Plant Genome with CRISPR/Cas: A Sustainable Strategy for Disease Management. **2022**, 369-396	0
302	RecBCD enzyme and Chi recombination hotspots as determinants of self vs. non-self: Myths and mechanisms. **2022**,	2

301	Genome Editing in Crops Via Homology-Directed Repair Using a Geminivirus-Based CRISPR/Cas9 System. **2022**, 119-137	0
300	Biosensing bacterial 16S rDNA by microchip electrophoresis combined with a CRISPR system based on real-time crRNA/Cas12a formation. **2022**, 12, 22219-22225	0
299	Targeted Gene Replacement in Plants Using CRISPR-Cas Technology. **2022**, 139-160	0
298	CRISPR/Cas-Mediated Functional Gene Editing for Improvement in Bioremediation: An Emerging Strategy. **2022**, 635-664	0
297	CRISPR/Cas-Based Genome Editing to Enhance Heat Stress Tolerance in Crop Plants. **2022**, 281-297	0
296	CRISPR-Cas Systems: Core Features and Common Mechanisms. **2022**, 1-12	0
295	Xenotransplantation: The Contribution of CRISPR/Cas9 Gene Editing Technology.	0
294	The Bibliometric Landscape of Gene Editing Innovation and Regulation in the Worldwide. **2022**, 11, 2682	0
293	Under the hood: The molecular biology driving gene therapy for the treatment of sickle cell disease. **2022**, 103566	0
292	How to Completely Squeeze a Fungus-Advanced Genome Mining Tools for Novel Bioactive Substances. **2022**, 14, 1837	1
291	CRISPR and iPSCs: Recent Developments and Future Perspectives in Neurodegenerative Disease Modelling, Research, and Therapeutics. **2022**, 40, 1597-1623	1
290	CRISPR evolves among the winners. **2022**, 6, 1412-1413	0
289	A tunable genome editing system of the prime editor mediated by dihydrofolate reductase. **2022**,	0
288	CRISPR/Cas: History and Perspectives. **2022**, 53, 272-282	0
287	Approaches for bacteriophage genome engineering. **2022**,	0
286	Current understanding of osteoarthritis pathogenesis and relevant new approaches. **2022**, 10,	5
285	A comprehensive overview of CRISPR/Cas 9 technology and application thereof in drug discovery.	1
284	Genome Editing Approaches with CRISPR/Cas9 for Cancer Treatment: Critical Appraisal of Preclinical and Clinical Utility, Challenges, and Future Research. **2022**, 11, 2781	0

283	Immune Responses to Gene Editing by Viral and Non-Viral Delivery Vectors Used in Retinal Gene Therapy. **2022**, 14, 1973	0
282	Snapshots of a tiny ancestral nuclease of Cas9. **2022**,	0
281	Adaptive immunity or evolutionary adaptation? Transgenerational immune systems at the crossroads. **2022**, 37,	0
280	Auxotrophic Lactobacillus Expressing Porcine Rotavirus VP4 Constructed Using CRISPR-Cas9D10A System Induces Effective Immunity in Mice. **2022**, 10, 1510	0
279	CRISPR/Cas9 mediated genome editing tools and their possible role in disease resistance mechanism.	0
278	Ten decadal advances in fungal biology leading towards human well-being. **2022**, 116, 547-614	2
277	Revealing bacteria-phage interactions in human microbiome through the CRISPR-Cas immune systems. 12,	0
276	Insights Gained from RNA Editing Targeted by the CRISPR-Cas13 Family. **2022**, 23, 11400	1
275	Genetically modified bacteriophages creating for the treatment of infections caused by multidrug resistant bacteria (review). **2022**, 7, 54-63	0
274	A Review on the Mechanism and Applications of CRISPR/Cas9/Cas12/Cas13/Cas14 Proteins Utilized for Genome Engineering.	1
273	Transcriptomics and RNA-Based Therapeutics as Potential Approaches to Manage SARS-CoV-2 Infection. **2022**, 23, 11058	0
272	Advances in CRISPR/Cas9. **2022**, 2022, 1-13	2
271	A programmable system to methylate and demethylate N6-Methyladenosine (m6A) on specific RNA transcripts in mammalian cells. **2022**, 102525	0
270	Novel PCR detection of CRISPR/Cas systems in Pseudomonas aeruginosa and its correlation with antibiotic resistance.	0
269	Structural rearrangements of a caspase-like protease TPR-CHAT govern virus-host discrimination during type III-E CRISPR-Caspase immunity.	0
268	Characterization of Phage Resistance and Their Impacts on Bacterial Fitness in Pseudomonas aeruginosa.	1
267	Characterization of the self-targeting Type IV CRISPR interference system in Pseudomonas oleovorans.	0
266	Allosteric activation of CRISPR-Cas12a requires the concerted movement of the bridge helix and helix 1 of the RuvC II domain. **2022**, 50, 10153-10168	0

265	CRISPR/Cas9 in the era of nanomedicine and synthetic biology. **2022**, 103375	0
264	Antibiotics that affect translation can antagonize phage infectivity by interfering with the deployment of counter-defences.	0
263	Research progress of CRISPR-based biosensors and bioassays for molecular diagnosis. 10,	3
262	RNA-targeting CRISPR□as systems.	1
261	Recent Progress and Future Prospect of CRISPR/Cas-Derived Transcription Activation (CRISPRa) System in Plants. **2022**, 11, 3045	1
260	Antimicrobial resistance: new insights and therapeutic implications. **2022**, 106, 6427-6440	0
259	The paradoxical relationship between CRISPR-Cas and phage susceptibility in Pseudomonas aeruginosa.	0
258	General guidelines for CRISPR/Cas-based genome editing in plants.	1
257	Research Progress on Nanoparticles-Based CRISPR/Cas9 System for Targeted Therapy of Tumors. **2022**, 12, 1239	0
256	Genetically encodable tagging and sensing systems for fluorescent RNA imaging. **2022**, 114769	0
255	Molecular basis of stepwise cyclic tetra-adenylate cleavage by the type III CRISPR ring nuclease Crn1/Sso2081.	0
254	Prevalence and analysis of CRISPR/Cas systems in Pseudomonas aeruginosa isolates from Greece.	0
253	How has microbiology changed 200 years after Pasteur□ birth?. **2022**, 345, 1-13	0
252	Application of 21st Century Genetic Engineering Tools and CRISPR-Cas9 Technologies to Treat Most Advanced Cardiovascular Diseases of Humans. **2022**, 79-103	0
251	Phage Therapy: A Different Approach to Fight Bacterial Infections. Volume 16, 173-186	0
250	Top-heavy trophic structure within benthic viral dark matter.	0
249	Recent advances in PCR-free nucleic acid detection for SARS-COV-2. 10,	0
248	Challenges and hopes in CRISPR CAS technology in future. 5-12	0

247	CRISPR-Cas: A continuously evolving technology. **2021**, 91,	0
246	CRISPR-Cas: Aktuelle og mulige anvendelser i ́odontologi. **2021**, 132,	0
245	Turning Tables for CRISPR/Cas9 Editing System: From Scratch to Advanced Delivery Platforms. **2022**, 1-27	0
244	Polymer-Mediated Delivery of CRISPR-Cas9 Genome-Editing Therapeutics for CNS Disease. **2022**, 229-258	0
243	Amyloid precursor protein in Alzheimer's disease. **2022**,	0
242	Genome Editing advances in Soybean Improvement against Biotic and Abiotic Stresses. **2022**, 241-274	0
241	Prokaryotic ncRNAs: Master regulators of gene expression. **2022**, 3, 100136	0
240	Homozygous CRISPR/Cas9 Knockout Generated a Novel Functionally Active Exon 1 Skipping XPA Variant in Melanoma Cells. **2022**, 23, 11649	0
239	Molecular basis of dual anti-CRISPR and auto-regulatory functions of AcrIF24.	0
238	Identification of CRISPR-Induced Mutations in Plants: with a Focus on the Next-Generation Sequencing Assay.	0
237	CRISPR-Cas Genome Editing Technique for Fish Disease Management: Current Study and Future Perspective. **2022**, 10, 2012	0
236	Actinobacteria in Natural Product Research: Avenues and Challenges. **2022**, 171-193	0
235	PreAcrs: a machine learning framework for identifying anti-CRISPR proteins. **2022**, 23,	0
234	Genome editing in mice and its application to the study of spermatogenesis. **2022**, 100014	0
233	The RNA repair proteins RtcAB regulate transcription activator RtcR via its CRISPR-associated Rossmann fold domain.. **2022**, 105425	0
232	Point-of-care CRISPR/Cas biosensing technology: A promising tool for preventing the possible COVID-19 resurgence caused by contaminated cold-chain food and packaging.	0
231	Molecular Biology, Genetics, and Translational Models of Human Cancer. 1-34	0
230	CRISPR-Cas systems mediated biosensing and applications in food safety detection. 1-26	0

229	Detection of Tropical Diseases Caused by Mosquitoes Using CRISPR-Based Biosensors. **2022**, 7, 309	0
228	The diverse arsenal of type III CRISPR-Cas-associated CARF and SAVED effectors. **2022**, 50, 1353-1364	0
227	Application of CRISPR for In Vivo Mouse Cancer Studies. **2022**, 14, 5014	0
226	CRISPR/Cas-Based Biosensor As a New Age Detection Method for Pathogenic Bacteria.	0
225	Target RNA activates the protease activity of Craspase to confer antiviral defense. **2022**,	0
224	Current updates of CRISPR/Cas9-mediated genome editing and targeting within tumor cells: an innovative strategy of cancer management.	1
223	Plant YTHDF proteins are direct effectors of antiviral immunity against an m6A-containing RNA virus.	0
222	Development and Applications of CRISPR/Cas9-Based Genome Editing in Lactobacillus. **2022**, 23, 12852	0
221	Contribution of CRISPRable DNA to human complex traits. **2022**, 5,	0
220	A new family of CRISPR -type V nucleases with C-rich PAM recognition.	0
219	Therapeutic modulation of gene expression in the disease state: Treatment strategies and approaches for the development of next-generation of the epigenetic drugs. 10,	0
218	Exploring and engineering PAM-diverse Streptococci Cas9 for PAM-directed bifunctional and titratable gene control in bacteria. **2022**,	0
217	Genome Editing for Sustainable Crop Improvement and Mitigation of Biotic and Abiotic Stresses. **2022**, 11, 2625	0
216	Advances in CRISPR therapeutics.	0
215	Correlation between CRISPR Loci Diversity in Three Enterobacterial Taxa. **2022**, 23, 12766	0
214	Broad-spectrum CRISPR-Cas13a enables efficient phage genome editing.	1
213	Expression of Cas9 in a Syngeneic Model of Primary Central Nervous System Lymphoma Induces Intracerebral NK and CD8 T Cell-Mediated Lymphoma Cell Lysis Via Perforin. **2022**, 5, 726-739	0
212	PAM binding ensures orientational integration during Cas4-Cas1-Cas2-mediated CRISPR adaptation. **2022**,	0

211	Site-Directed DNA Sequence Modification Using CRISPR/Cas 9. **2022**, 149-173	0
210	Genome editing in plants using the compact editor Cas	0
209	Site-Specific Recombination for Gene Locus-Directed Transgene Integration and Modification. **2022**, 100-124	0
208	Identification of the EH CRISPR-Cas9 system on a metagenome and its application to genome engineering.	0
207	Genomic insights into phage-host interaction in the deep-sea chemolithoautotrophic Campylobacterota, Nitratiruptor. **2022**, 2,	0
206	DNA topology regulates PAM-Cas9 interaction and DNA unwinding to enable near-PAMless cleavage by thermophilic Cas9. **2022**, 82, 4160-4175.e6	0
205	Tap the sap Investigation of latex-bearing plants in the search of potential anticancer biopharmaceuticals. 13,	0
204	The economics and policy of genome editing in crop improvement.	0
203	The Crispr Revolution in Genome Engineering: Perspectives from Religious Ethics.	0
202	In vivo delivery of CRISPR-Cas9 genome editing components for therapeutic applications. **2022**, 291, 121876	1
201	A versatile CRISPR/Cas12a-based biosensing platform coupled with a target-protected transcription strategy. **2023**, 219, 114801	1
200	Potato production in South America. **2023**, 409-433	0
199	New Cas Endonuclease Variants Broadening the Scope of the CRISPR Toolbox. **2022**, 133-141	0
198	Genome Engineering as a Tool for Enhancing Crop Traits: Lessons from CRISPR/Cas9. **2022**, 3-25	0
197	Microbial Enzymes and Organic Acids Production from Vegetable and Fruit Wastes and Their Applications. **2022**, 237-257	0
196	Transgene-Free Genome Editing in Plants. **2022**, 171-186	0
195	Identification and Analysis of Small Molecule Inhibitors of CRISPR-Cas9 in Human Cells. **2022**, 11, 3574	0
194	CRISPR/Cas9 Genome-Editing Technology and Potential Clinical Application in Gastric Cancer. **2022**, 13, 2029	0

193	Prime editing for precise and highly versatile genome manipulation.	3
192	Hyper-stimulation of Pyrococcus furiosus CRISPR DNA uptake by a self-transmissible plasmid. **2022**, 26,	0
191	Intended and unintended consequences of genetically modified crops □myth, fact and/or manageable outcomes?. 1-101	0
190	CRISPR-Cas Systems in Diagnostics: A Comprehensive Assessment of Cas Effectors and Biosensors. **2022**, 100019	0
189	Functional characterization of diverse type I-F CRISPR-associated transposons.	0
188	Site-specific genome editing in treatment of inherited diseases: possibility, progress, and perspectives. **2022**,	0
187	Shifted PAMs generate DNA overhangs and enhance SpCas9 post-catalytic complex dissociation.	0
186	Genomic analysis and biochemical profiling of an unaxenic strain of Synechococcus sp. isolated from the Peruvian Amazon Basin region. 13,	0
185	Gene editing strategies to treat lysosomal disorders: The example of mucopolysaccharidoses. **2022**, 191, 114616	0
184	Detection and identification of Lactobacillus acidophilus species and its commercial probiotic strains using CRISPR loci-based amplicon analysis. **2022**, 171, 114166	0
183	Progresses of CRISPR/Cas9 genome editing in forage crops. **2022**, 279, 153860	1
182	Integration of CRISPR/Cas9 with artificial intelligence for improved cancer therapeutics. **2022**, 20,	1
181	Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) technology and genetic engineering strategies for microalgae towards carbon neutrality: A critical review. **2022**, 128350	0
180	Determination of Acr-mediated immunosuppression in Pseudomonas aeruginosa. **2023**, 10, 101941	0
179	CASMART, a one-step CRISPR Cas12a-mediated isothermal amplification for rapid and high-resolution digital detection of rare mutant alleles. **2023**, 222, 114956	1
178	Host nucleases generate prespacers for primed adaptation in the E. coli type I-E CRISPR-Cas system. **2022**, 8,	1
177	Novel Production Methods of Polyhydroxyalkanoates and Their Innovative Uses in Biomedicine and Industry. **2022**, 27, 8351	1
176	Suppressing gain-of-function proteins via CRISPR/Cas9 system in SCA1 cells. **2022**, 12,	0

175	CRISPR-Cas System: A Tool to Eliminate Drug-Resistant Gram-Negative Bacteria. **2022**, 15, 1498	0
174	Developing New Tools to Fight Human Pathogens: A Journey through the Advances in RNA Technologies. **2022**, 10, 2303	0
173	Genomic analysis and in vivo efficacy of Pediococcus acidilactici as a potential probiotic to prevent hyperglycemia, hypercholesterolemia and gastrointestinal infections. **2022**, 12,	1
172	Diverse virus-encoded CRISPR-Cas systems include streamlined genome editors. **2022**, 185, 4574-4586.e16	0
171	Nonconventional Yeasts Engineered Using the CRISPR-Cas System as Emerging Microbial Cell Factories. **2022**, 8, 656	0
170	CRISPR-Based Tools for Fighting Rare Diseases. **2022**, 12, 1968	0
169	Potential therapeutic strategies for photoreceptor degeneration: the path to restore vision. **2022**, 20,	1
168	Chapter 29: Perspectives on the genetic manipulation of mosquitoes: advancements in studying sensory biology in vector insects. **2022**, 743-771	1
167	Phage Encounters Recorded in CRISPR Arrays in the Genus Oenococcus. **2023**, 15, 15	0
166	Widespread, human-associated redondoviruses infect the commensal protozoan Entamoeba gingivalis. **2022**,	1
165	Frame Editors for Precise, Template-Free Frameshifting.	0
164	Structural basis for the non-self RNA-activated protease activity of the type III-E CRISPR nuclease-protease Craspase. **2022**, 13,	0
163	CRISPR: a tool with potential for genomic reprogramming in neurological disorders.	0
162	CRISPR-Mediated Genome Engineering in Cell Lines. **2023**, 267-278	0
161	Intelligent nanotherapeutic strategies for the delivery of CRISPR system. **2022**,	0
160	Exploring Viral Communities Associated With Terrestrial Cyanobacteria Metagenomes.	0
159	Maximizing the Efficacy of CRISPR/Cas Homology-Directed Repair Gene Targeting.	0
158	The host phylogeny determines viral infectivity and replication acrossStaphylococcushost species.	0

157	Gene Editing and Human iPSCs in Cardiovascular and Metabolic Diseases. **2023**, 275-298	0
156	Critical roles for housekeeping nucleases in type III CRISPR-Cas immunity. 11,	0
155	Dynamic interplay between target search and recognition for the Cascade surveillance complex of type I-E CRISPR-Cas systems.	0
154	New Therapeutics for Extracellular Vesicles: Delivering CRISPR for Cancer Treatment. **2022**, 23, 15758	0
153	A quantitative model for the dynamics of target recognition and off-target rejection by the CRISPR-Cas Cascade complex. **2022**, 13,	0
152	An Ultrasensitive PCR-Based CRISPR-Cas13a Method for the Detection of Helicobacter pylori. **2022**, 12, 2082	0
151	Comprehensive computational analysis of epigenetic descriptors affecting CRISPR-Cas9 off-target activity. **2022**, 23,	0
150	High-efficiency genome editing of an extreme thermophile Thermus thermophilus using endogenous type I and type III CRISPR-Cas systems. **2022**, 1, 412-427	0
149	Compact Cas9d and HEARO enzymes for genome editing discovered from uncultivated microbes. **2022**, 13,	0
148	Hematopoietic stem and progenitors cells gene editing: Beyond blood disorders. 4,	0
147	A CRISPR-Cas Cure for HIV/AIDS. **2023**, 24, 1563	0
146	Machine learning in the estimation of CRISPR-Cas9 cleavage sites for plant system. 13,	0
145	Legionnaires Disease in China Caused by Legionella pneumophila Corby. **2023**, 11, 204	0
144	An electrochemical aptasensor based on exonuclease III-assisted signal amplification coupled with CRISPR-Cas12a for ochratoxin A detection. **2023**, 109631	0
143	Research progress on nucleic acid detection and genome editing of CRISPR/Cas12 system.	0
142	Engineering CRISPR/Cas-based nanosystems for therapeutics, diagnosis and bioimaging. **2023**, 108134	0
141	Evolution of CRISPR-associated endonucleases as inferred from resurrected proteins. **2023**, 8, 77-90	0
140	A Designed Vessel Using Dissolvable Polyvinyl Alcohol Membrane as Automatic Valve to Couple LAMP with CRISPR/Cas12a System for Visual Detection. **2023**, 13, 111	0

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139	Analyzing the genetic diversity and biotechnological potential of Leuconostoc pseudomesenteroides by comparative genomics. 13,	0
138	Clustered regularly interspaced short palindromic repeats/Cas9-mediated gene editing. A promising strategy in hematological disorders. **2023**,	0
137	Quorum sensing inhibits Type III-A CRISPR-Cas system activity through repressing positive regulators SarA and ArcR in Staphylococcus aureus.	0
136	Recent Advances in Genome-Engineering Strategies. **2023**, 14, 129	1
135	Anti-CRISPR AcrIIC5 is a dsDNA mimic that inhibits type II-C Cas9 effectors by blocking PAM recognition.	0
134	CRISPR-Cas provides limited phage immunity to a prevalent gut bacterium in gnotobiotic mice.	0
133	CRISPR/Cas9 therapeutics: progress and prospects. **2023**, 8,	0
132	A CRISPR-Cas12a-based platform for ultrasensitive, rapid, and highly specific detection of Mycoplasma pneumonia in clinical application. 11,	0
131	Anti-CRISPR discovery: using magnets to find needles in haystacks. **2023**, 167952	0
130	Identification of a new antiphage system inMycobacteriumphage Butters.	0
129	AcrPred: A hybrid optimization with enumerated machine learning algorithm to predict Anti-CRISPR proteins. **2023**, 228, 706-714	0
128	Tending genome editing via CRISPR/Cas9-induced mutagenesis: Opportunity and challenges for yield, quality and nutritional improvement of fruit crops. **2023**, 311, 111790	0
127	A Landscape of CRISPR/Cas Technique for Emerging Viral Disease Diagnostics and Therapeutics: Progress and Prospects. **2023**, 12, 56	0
126	Insights into the Mechanism of CRISPR/Cas9-Based Genome Editing from Molecular Dynamics Simulations. **2023**, 8, 1817-1837	0
125	Advances in CRISPR-Cas9 for the Baculovirus Vector System: A Systematic Review. **2023**, 15, 54	0
124	sistema CRISPR-Cas y su aplicaci en las enfermedades infecciosas. **2019**, 9, 9-11	0
123	CRISPR engineering in organoids for gene repair and disease modelling. **2023**, 1, 32-45	0
122	Genome expansion by a CRISPR trimmer-integrase.	0

121	Molecular Neurosurgery: Introduction to Gene Therapy and Clinical Applications. **2023**, 12, 050-062	0
120	Prevalence and Characterization of CRISPR Locus 2.1 Spacers in Escherichia coli Isolates Obtained from Feces of Animals and Humans.	0
119	The genome editing revolution. **2023**,	0
118	CRISPR-Cas engineering in food science and sustainable agriculture: recent advancements and applications.	0
117	Implications of CRISPR-Cas9 genome editing methods in atherosclerotic cardiovascular diseases. **2023**, 101603	0
116	CRISPR-Cas Biochemistry and CRISPR-Based Molecular Diagnostics.	0
115	Involvement of CRISPR-Cas Systems in Salmonella Immune Response, Genome Editing, and Pathogen Typing in Diagnosis and Surveillance.	0
114	Recent progress in nucleic acid detection with CRISPR.	1
113	Precise transcript targeting by CRISPR-Csm complexes.	2
112	An expectation–maximization algorithm for estimating proportions of deletions among bacterial populations with application to study antibiotic resistance gene transfer in Enterococcus faecalis.	0
111	CRISPR-Cas Biochemistry and CRISPR-Based Molecular Diagnostics.	0
110	Advances in CRISPR/Cas technologies and their application in plants. **2023**, 1-10	0
109	Programmable RNA detection with CRISPR-Cas12a.	0
108	Detection Methods for Foodborne Viruses: Current State-of-Art and Future Perspectives.	0
107	The escape of CRISPR-mediated gene editing in Zymomonas mobilis.	0
106	Applications of CRISPR/Cas genome editing in economically important fruit crops: recent advances and future directions. **2023**, 3,	0
105	CRISPR-Cas system as a promising player against bacterial infection and antibiotic resistance. **2023**, 68, 100948	0
104	Structural characterization of the type I-B CRISPR Cas7 from Thermobaculum terrenum. **2023**, 1871, 140900	0

103	CRISPR and CAS Editing Tools Employent in the Control of AMR Pathogens. **2023**, 1-19	0
102	Genome Editing Using CRISPR. **2023**, 1-26	0
101	Visualizing the Nucleome Using the CRISPR–Cas9 System: From in vitro to in vivo. **2023**, 88, S123-S149	0
100	Restriction endonuclease cleavage of phage DNA enables resuscitation from Cas13-induced bacterial dormancy. **2023**, 8, 400-409	0
99	A high-content flow cytometry and dual CRISPR-Cas9 based platform to quantify genetic interactions. **2023**,	0
98	Reversing the Central Dogma: RNA-guided control of DNA in epigenetics and genome editing. **2023**, 83, 442-451	0
97	Long-term CRISPR array dynamics and stable host-virus co-existence in subsurface fractured shales.	0
96	Precise genome editing with base editors. **2023**, 3, 75-84	0
95	Conserved domains can be found across distinct phage defence systems.	0
94	Functional characterization and taxonomic classification of novel gammaproteobacterial diversity in sponges. **2023**, 46, 126401	0
93	CRISPR-Cas effector specificity and cleavage site determine phage escape outcomes. **2023**, 21, e3002065	0
92	Use of CRISPR-based screens to identify mechanisms of chemotherapy resistance.	0
91	Proteomic Study of the Interactions between Phages and the Bacterial Host Klebsiella pneumoniae. **2023**, 11,	0
90	CRISPR/Cas9 system and its applications in nervous system diseases. **2023**,	0
89	CRISPR-Cas assisted diagnostics: A broad application biosensing approach. **2023**, 162, 117028	0
88	Functional PAM sequence for DNA interference by CRISPR-Cas I-B system of Leptospira interrogans and the role of LinCas11b encoded within lincas8b. **2023**, 237, 124086	0
87	CRISPR-Cas for genome editing: Classification, mechanism, designing and applications. **2023**, 238, 124054	1
86	Toxin–antitoxin systems as mediators of phage defence and the implications for abortive infection. **2023**, 73, 102293	0

85	Generating minimum set of gRNA to cover multiple targets in multiple genomes with MINORg.	0
84	Microbiome diversity from sponges biogeographically distributed between South America and Antarctica. **2023**, 163256	0
83	Cas12a/blocker DNA-based multiplex nucleic acid detection system for diagnosis of high-risk human papillomavirus infection. **2023**, 232, 115323	0
82	Metabolic Engineering for High-Value Bioactive Compounds from Medicinal Plants. **2022**, 521-544	0
81	The Current Status of Antisense Gene Therapies for Bacteria-caused Diseases Challenges and Opportunities. **2023**, 29, 272-282	0
80	CRISPR technology: A decade of genome editing is only the beginning. **2023**, 379,	4
79	Genome editing with natural and engineered CjCas9 orthologs. **2023**, 31, 1177-1187	0
78	Tail-Engineered Phage P2 Enables Delivery of Antimicrobials into Multiple Gut Pathogens. **2023**, 12, 596-607	1
77	Anti-CRISPR Protein AcrIIC5 Inhibits CRISPR-Cas9 by Occupying the Target DNA Binding Pocket. **2023**, 435, 167991	0
76	Anti-CRISPR AcrIIC5 is a dsDNA mimic that inhibits type II-C Cas9 effectors by blocking PAM recognition. **2023**, 51, 1984-1995	0
75	Horizontal gene transfer and CRISPR targeting drive phage-bacterial host interactions and coevolution in pink berry marine microbial aggregates.	0
74	CRISPR/Cas9 : de la recherche l application th apeutique. **2023**, 46, 398-407	0
73	Enabling technology and core theory of synthetic biology.	0
72	Modified Bacteriophage for Tumor Detection and Targeted Therapy. **2023**, 13, 665	0
71	rench Phage Network Annual Conference eventh Meeting Report. **2023**, 15, 495	0
70	CRISPRi in Xanthomonas demonstrates functional convergence of transcription activator-like effectors in two divergent pathogens. **2023**, 238, 1593-1604	0
69	The Role of Advanced Therapeutic Techniques to Combat Multi-drug Resistance. **2023**, 29-55	0
68	Revolutionizing DNA repair research and cancer therapy with CRISPR as screens.	0

67	The Battle between Bacteria and Bacteriophages: A Conundrum to Their Immune System. **2023**, 12, 381	0
66	Role of Bacteriophages as Non-traditional Approaches to Combat Multidrug Resistance. **2023**, 141-177	0
65	Recent advances in nanocomposite-based delivery systems for targeted CRISPR/Cas delivery and therapeutic genetic manipulation.	0
64	The RNA–RNA interactome between a phage and its satellite virus reveals a small RNA that differentially regulates gene expression across both genomes. **2023**, 119, 515-533	0
63	Role of Bacteriophages in the Evolution of Pathogenic Vibrios and Lessons for Phage Therapy. **2023**, 149-173	0
62	Recent advances and applications of CRISPR-Cas9 in cancer immunotherapy. **2023**, 22,	0
61	Specialty grand challenge frontiers in bacteriology: Pathogenesis, vaccines, and immunity of bacterial infections. 1,	0
60	Molecular basis of stepwise cyclic tetra-adenylate cleavage by the type III CRISPR ring nuclease Crn1/Sso2081. **2023**, 51, 2485-2495	0
59	CRISPR-Cas adaptation in Escherichia coli. **2023**, 43,	0
58	Delivery challenges for CRISPR–Cas9 genome editing for Duchenne muscular dystrophy. **2023**, 4, 011307	0
57	A Split CRISPR/Cas13b System for Conditional RNA Regulation and Editing. **2023**, 145, 5561-5569	0
56	An Ultrasensitive Colorimetric Foodborne Pathogenic Detection Method Using a CRISPR/Cas12a Mediated Strand Displacement/Hybridization Chain Reaction. **2023**, 71, 4193-4200	0
55	Unveil the Secret of the Bacteria and Phage Arms Race. **2023**, 24, 4363	0
54	Shotgun knockdown of RNA by CRISPR-Cas13d in fission yeast. **2023**, 136,	0
53	Gene Therapy and Gene Editing. **2023**, 269-334	0
52	Dynamics of Target DNA Binding and Cleavage by Staphylococcus aureus Cas9 as Revealed by High-Speed Atomic Force Microscopy. **2023**, 17, 4629-4641	0
51	Biomolecular condensates: Formation mechanisms, biological functions, and therapeutic targets. **2023**, 4,	0
50	Improving the Editing Efficiency of CRISPR-Cas9 by Reducing the Generation of Escapers Based on the Surviving Mechanism. **2023**, 12, 672-680	0

49	The history, use, and challenges of therapeutic somatic cell and germline gene editing. **2023**,	0
48	Distinct horizontal transfer mechanisms for type I and type V CRISPR-associated transposons.	0
47	Coexistence of blaKPC-IncFII plasmids and type I-E* CRISPR-Cas systems in ST15 Klebsiella pneumoniae. 14,	0
46	Diverse Mechanisms of CRISPR-Cas9 Inhibition by Type II Anti-CRISPR Proteins. **2023**, 435, 168041	0
45	Reprogramming an RNA-guided archaeal TnpB endonuclease for genome editing.	0
44	Immunomodulation: general review of the current state-of-the-art and new therapeutic strategies for targeting the immune system. 14,	0
43	Long-Term Evaluation of Retinal Morphology and Function in Rosa26-Cas9 Knock-In Mice. **2023**, 24, 5186	0
42	Genetic improvement in Musa through modern biotechnological methods. **2023**, 8, 1-13	0
41	New CRISPR Technology for Creating Cell Models of Lipoprotein Assembly and Secretion.	0
40	Structures of apo Cas12a and its complex with crRNA and DNA reveal the dynamics of ternary complex formation and target DNA cleavage. **2023**, 21, e3002023	0
39	Evolution of the CRISPR-Cas9 defence system following a bacterial host shift.	0
38	Excision of Integrated Human Herpesvirus 6A Genomes Using CRISPR/Cas9 Technology. **2023**, 11,	0
37	CRISPR-dCas9 system for epigenetic editing towards therapeutic applications. **2023**,	0
36	Advances and Challenges in CRISPR/Cas-Based Fungal Genome Engineering for Secondary Metabolite Production: A Review. **2023**, 9, 362	0
35	EndogenousStaphylococcus aureusCRISPR-cassystem limits phage proliferation and efficiently excises from the genome as part of the SCCmeccassette.	0
34	Editing the Genome. **2023**, 715-718	0
33	CRISPR-mediated technology for seed oil improvement in rapeseed: Challenges and future perspectives. 14,	0
32	Establishment, optimization, and application of genetic technology in Aspergillus spp.. 14,	0

31	Tailoring crops with superior product quality through genome editing: an update. **2023**, 257,	0
30	Genomic Analysis of a New Freshwater Cyanophage Lbo240-yong1 Suggests a New Taxonomic Family of Bacteriophages. **2023**, 15, 831	0
29	Collateral activity of the CRISPR/RfxCas13d system in human cells. **2023**, 6,	0
28	Anti-CRISPR protein mediated degradation of Cas9 in human cells.	0
27	CRISPR/Cas9-Mediated Genome Editing in Zebrafish. **2023**, 371-380	0
26	A new method for the detection of Mycobacterium tuberculosis based on the CRISPR/Cas system.	0
25	Whole genome sequencing of a novel Bacillus thuringiensis isolated from Assam soil. **2023**, 23,	0
24	Outlook on the Security and Potential Improvements of CRISPR□as9.	0
23	Genomic Islands in Marine Bacteria. **2023**, 325-334	0
22	Target-independent hybridization chain reaction-fluorescence resonance energy transfer for sensitive assay of ctDNA based on Cas12a. **2023**, 1261, 341170	0
21	CRISPR-Cas12a Biosensor Array for Ultrasensitive Detection of Unamplified DNA with Single-Nucleotide Polymorphic Discrimination.	0
20	Rapid detection of isocitrate dehydrogenase 1 mutation status in glioma based on Crispr-Cas12a. **2023**, 13,	0
19	Screening Method for the Identification and Characterization of Transcription Factors Regulating Flesh Fruit Development and Ripening. **2023**, 17-61	0
18	A Review of CRISPR-Based Advances in Dermatological Diseases.	0
17	Molecular detection and characterization of foodborne bacteria: Recent progresses and remaining challenges.	0
16	Binding to the Conserved and Stably Folded Guide RNA Pseudoknot Induces Cas12a Conformational Changes During Ribonucleoprotein Assembly. **2023**, 104700	0
15	Computationally Engineered CRISPR-SpyCas9 High-Fidelity Variants with Improved Specificity and Reduced Non-specific DNA Damage.	0
14	A Diverse Virome Is Identified in Parasitic Flatworms of Domestic Animals in Xinjiang, China.	0

13	Associate toxin-antitoxin with CRISPR-Cas to kill multidrug-resistant pathogens. **2023**, 14,	0
12	CRISPR detection in metagenome-assembled genomes (MAGs) of coal mine. **2023**, 23,	0
11	The biology and type I/III hybrid nature of type I-D CRISPR□as systems. **2023**, 480, 471-488	0
10	Marker-assisted selection and use of molecular markers in sunflower breeding for resistance to diseases and parasites. **2022**, 14-29	0
9	Rapid detection of the pine wood nematode Bursaphelenchus xylophilus using recombinase polymerase amplification combined with CRISPR/Cas12a. **2023**, 106259	0
8	Application of CRISPR/Cas9-mediated gene editing for abiotic stress management in crop plants. 14,	0
7	Vector enabled CRISPR gene editing □A revolutionary strategy for targeting the diversity of brain pathologies. **2023**, 487, 215172	0
6	Distribution and molecular evolution of the anti-CRISPR family AcrIF7. **2023**, 21, e3002072	0
5	Using traditional machine learning and deep learning methods for on- and off-target prediction in CRISPR/Cas9: a review.	0
4	Production of MSTN knockout porcine cells using adenine base-editing-mediated exon skipping.	0
3	Potential of CRISPR/Cas system as emerging tools in the detection of viral hepatitis infection. **2023**, 20,	0
2	Discovery of Diverse CRISPR-Cas Systems and Expansion of the Genome Engineering Toolbox.	0
1	Research progress of CRISPR/Cas systemsin nucleic acid detection. **2023**,	0