Report for Analysis tools Review

Administrative

This report is intended for reviewers of the pathway analysis:" https://reactome.org/PathwayBrowser/#/DTAB=AN&ANALYSIS="MjAxNzExMTcwODEzMjBfNzU%253D(please note that this URL maybe out of date because of the token can expired at our server end)and your input identifiers are :222107_x_at,216505_x_at,220607_x_at,222286_at,201741_x_at,.... It has been automatically generated in Reactome version 62 at 13:27 24/11/2017

Introduction

Each reaction (pathway event) is represented here by a simple diagram. Input molecules are shown as labelled boxes (left side) connected by plain lines to a central square. Arrowed lines connect the central square to the output molecules (right side). If relevant, catalyst molecules are represented above the central square, connected to it by a red arrowed line. Input molecules that are also the catalyst (e.g. signaling or enzyme/substrate complexes) are shown on the left and joined to the central node by a red arrowed line. The names of reactions that precede/follow in the pathway are shown as text on the far left/far right respectively.

Summary text may appear to be overlapping or redundant. Please remember that this document is extracted from multiple pages on the Reactome website, this redundancy is useful to provide context for users who might first arrive at a mid-point in the pathway. Suggestions for improvement are welcome.

Reactome represents human biology. Literature references that demonstrate the occurrence of the reaction in humans are given preference, they are not intended to provide a historical record. Unfortunately we do not have the resources to identify all relevant references, but we are happy to cite any that you feel should be included.In your review, we would appreciate it if you could verify that the events that we describe (pathways and reactions) are annotated clearly and that the molecular details of the reactions are accurate.

In your review, we would appreciate it if you could verify that the events that we describe (pathways and reactions) are annotated clearly and that the molecular details of the reactions are accurate.

A more detailed representation of the pathway as a diagram can be found on our website. We would appreciate your feedback on the content and navigability of the website. A short tutorial of the Pathway Browser can be found at the top of the webpage. The zoomable pathway diagram is interactive. Text descriptions are revealed in the panel below the diagram under the overview tab. To view a text description, select a participating molecule or reaction node in the diagram. Clicking on an event in the hierarchy in the left panel will highlight the event(s) in the diagram and a text description will be displayed in the panel below

Take a look at our's literature for more information:

The Reactome pathway Knowledgebase,Nucleic Acids Research, Volume 44, Issue D1, 4 January 2016, Pages D481–D487
Open Targets: a platform for therapeutic target identification and validation,Nucleic Acids Research, Volume 45, Issue D1, 4 January 2017, Pages D985–D994
Reactome enhanced pathway visualization,Bioinformatics, Volume 33, Issue 21, 1 November 2017, Pages 3461–3467

Summary

1. 1168 of 1203 identifiers you submitted was found in Reactome.
2. 1164 pathways was hit in Reactome total {} pathways.
3. 50 of top Enhanced/Overrepresented pathways was list based on p-Value.
4. The "fireworks" diagram for this pathway analysis:

Details

1. Top 50 Overrepresentation pathways sorted by p-Value.

Results for:UNIPROT(1164) Type:EXPRESSION Data:Probeset Identifiers not found:35

Pathway name	Entities found	Entities Total	Entities ratio	Entities pValue	Entities FDR	Reactions found	Reactions total	Reactions ratio	Species name
RNA Pol II CTD phosphorylation and interaction with CE during HIV infection	23	27	0.002	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
RNA Pol II CTD phosphorylation and interaction with CE	23	27	0.002	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
RNA Polymerase II Transcription Pre-Initiation And Promoter Opening	37	46	0.0034	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Assembly of the pre-replicative complex	53	68	0.005	1.1102230246251565E-16	6.661338147750939E-16	12	12	0.0011	Homo sapiens
Formation of HIV elongation complex in the absence of HIV Tat	37	48	0.0036	1.1102230246251565E-16	6.661338147750939E-16	2	2	0.0002	Homo sapiens
Formation of the HIV-1 Early Elongation Complex	28	37	0.0027	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Formation of the Early Elongation Complex	28	37	0.0027	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
DNA Replication Pre-Initiation	66	88	0.0065	1.1102230246251565E-16	6.661338147750939E-16	20	20	0.0018	Homo sapiens
M/G1 Transition	66	88	0.0065	1.1102230246251565E-16	6.661338147750939E-16	20	20	0.0018	Homo sapiens
CDT1 association with the CDC6:ORC:origin complex	44	59	0.0044	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
Regulation of DNA replication	58	78	0.0058	1.1102230246251565E-16	6.661338147750939E-16	14	14	0.0013	Homo sapiens
Activation of the pre-replicative complex	26	35	0.0026	1.1102230246251565E-16	6.661338147750939E-16	8	8	0.0007	Homo sapiens
Formation of HIV-1 elongation complex containing HIV-1 Tat	36	49	0.0036	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Removal of licensing factors from origins	55	75	0.0056	1.1102230246251565E-16	6.661338147750939E-16	11	11	0.001	Homo sapiens
p53-Independent G1/S DNA damage checkpoint	40	55	0.0041	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
p53-Independent DNA Damage Response	40	55	0.0041	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Ubiquitin Mediated Degradation of Phosphorylated Cdc25A	40	55	0.0041	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Switching of origins to a post-replicative state	53	73	0.0054	1.1102230246251565E-16	6.661338147750939E-16	9	9	0.0008	Homo sapiens
Orc1 removal from chromatin	53	73	0.0054	1.1102230246251565E-16	6.661338147750939E-16	4	4	0.0004	Homo sapiens
RNA Polymerase II HIV Promoter Escape	37	51	0.0038	1.1102230246251565E-16	6.661338147750939E-16	7	7	0.0006	Homo sapiens
RNA Polymerase II Promoter Escape	37	51	0.0038	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
HIV Transcription Initiation	37	51	0.0038	1.1102230246251565E-16	6.661338147750939E-16	4	4	0.0004	Homo sapiens
RNA Polymerase II Transcription Initiation	37	51	0.0038	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
Activation of ATR in response to replication stress	28	39	0.0029	1.1102230246251565E-16	6.661338147750939E-16	9	9	0.0008	Homo sapiens
Ubiquitin-dependent degradation of Cyclin D1	38	53	0.0039	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
Ubiquitin-dependent degradation of Cyclin D	38	53	0.0039	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
CDK-mediated phosphorylation and removal of	38	53	0.0039	1.1102230246251565E-16	6.661338147750939E-16	4	4	0.0004	Homo sapiens

Pathway name	Entities found	Entities Total	Entities ratio	Entities pValue	Entities FDR	Reactions found	Reactions total	Reactions ratio	Species name
Cdc6									
mRNA Capping	25	35	0.0026	1.1102230246251565E-16	6.661338147750939E-16	11	11	0.001	Homo sapiens
Regulation of ornithine decarboxylase (ODC)	37	52	0.0038	1.1102230246251565E-16	6.661338147750939E-16	4	4	0.0004	Homo sapiens
Transcription of the HIV genome	56	80	0.0059	1.1102230246251565E-16	6.661338147750939E-16	45	45	0.0041	Homo sapiens
RNA Polymerase II Transcription Initiation And Promoter Clearance	37	53	0.0039	1.1102230246251565E-16	6.661338147750939E-16	9	9	0.0008	Homo sapiens
AUF1 (hnRNP D0) binds and destabilizes mRNA	39	56	0.0041	1.1102230246251565E-16	6.661338147750939E-16	4	4	0.0004	Homo sapiens
RNA Polymerase III Transcription Initiation	25	36	0.0027	1.1102230246251565E-16	6.661338147750939E-16	13	13	0.0012	Homo sapiens
HIV Transcription Elongation	36	52	0.0038	1.1102230246251565E-16	6.661338147750939E-16	15	15	0.0014	Homo sapiens
Tat-mediated elongation of the HIV-1 transcript	36	52	0.0038	1.1102230246251565E-16	6.661338147750939E-16	8	8	0.0007	Homo sapiens
Dual Incision in GG-NER	27	41	0.003	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
HIV elongation arrest and recovery	26	40	0.003	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
Pausing and recovery of HIV elongation	26	40	0.003	1.1102230246251565E-16	6.661338147750939E-16	2	2	0.0002	Homo sapiens
Tat-mediated HIV elongation arrest and recovery	25	39	0.0029	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
Pausing and recovery of Tat-mediated HIV elongation	25	39	0.0029	1.1102230246251565E-16	6.661338147750939E-16	2	2	0.0002	Homo sapiens
Gap-filling DNA repair synthesis and ligation in TC-NER	41	66	0.0049	1.1102230246251565E-16	6.661338147750939E-16	2	2	0.0002	Homo sapiens
RNA Polymerase II Pre-transcription Events	54	87	0.0064	1.1102230246251565E-16	6.661338147750939E-16	17	17	0.0015	Homo sapiens
Dual incision in TC-NER	42	68	0.005	1.1102230246251565E-16	6.661338147750939E-16	6	6	0.0005	Homo sapiens
Formation of RNA Pol II elongation complex	37	61	0.0045	1.1102230246251565E-16	6.661338147750939E-16	2	2	0.0002	Homo sapiens
RNA Polymerase II Transcription Elongation	37	65	0.0048	1.1102230246251565E-16	6.661338147750939E-16	8	8	0.0007	Homo sapiens
mRNA Splicing - Minor Pathway	31	56	0.0041	1.1102230246251565E-16	6.661338147750939E-16	5	5	0.0005	Homo sapiens
RNA Polymerase III Transcription	25	46	0.0034	1.1102230246251565E-16	6.661338147750939E-16	25	25	0.0023	Homo sapiens
RNA Polymerase III Abortive And Retractive Initiation	25	46	0.0034	1.1102230246251565E-16	6.661338147750939E-16	13	13	0.0012	Homo sapiens
Cdc20:Phospho-APC/C mediated degradation of Cyclin A	39	72	0.0053	1.1102230246251565E-16	6.661338147750939E-16	3	3	0.0003	Homo sapiens
Transcription-Coupled Nucleotide Excision Repair (TC-NER)	46	85	0.0063	1.1102230246251565E-16	6.661338147750939E-16	16	16	0.0014	Homo sapiens

2. Pathway details.

2.1. RNA Pol II CTD phosphorylation and interaction with CE during HIV infection (R-HSA-167160)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,To facilitate co-transcriptional capping, and thereby restrict the cap structure to RNAs made by RNA polymerase II, the capping enzymes bind directly to the RNA polymerase II. The C-terminal domain of the largest Pol II subunit contains several phosphorylation sites on its heptapeptide repeats. The capping enzyme guanylyltransferase and the methyltransferase bind specifically to CTD phosphorylated at Serine 5 within the CTD. Kinase subunit of TFIIH, Cdk7, catalyzes this phosphorylation event that occurs near the promoter. In addition, it has been shown that binding of capping enzyme to the Serine-5 phosphorylated CTD stimulates guanylyltransferase activity in vitro.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	209302_at	208996_s_at	204208_at
202683_s_at	213887_s_at	217420_s_at	201480_s_at	214144_at	202684_s_at

203664_s_at	222104_x_at	221540_x_at	202453_s_at	217854_s_at	202634_at
202354_s_at	204093_at	204207_s_at	203565_s_at	211297_s_at	211849_s_at
201803_at	212955_s_at	202355_s_at	202176_at	202451_at	203577_at
213468_at	202635_s_at	212782_x_at			

Authors

Matthews, L, 2005-10-11 08:40:23

Editors

Shorser, Solomon, 2016-11-07

2.2. RNA Pol II CTD phosphorylation and interaction with CE (R-HSA-77075)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,To facilitate co-transcriptional capping, and thereby restrict the cap structure to RNAs made by RNA polymerase II, the capping enzymes bind directly to the RNA polymerase II. The C-terminal domain of the largest Pol II subunit contains several phosphorylation sites on its heptapeptide repeats. The capping enzyme guanylyltransferase and the methyltransferase bind specifically to CTD phosphorylated at Serine 5 within the CTD. Kinase subunit of TFIIH, Cdk7, catalyzes this phosphorylation event that occurs near the promoter. In addition, it has been shown that binding of capping enzyme to the Serine-5 phosphorylated CTD stimulates guanylyltransferase activity in vitro.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	209302_at	208996_s_at	204208_at
202683_s_at	213887_s_at	217420_s_at	201480_s_at	214144_at	202684_s_at
203664_s_at	222104_x_at	221540_x_at	202453_s_at	217854_s_at	202634_at
202354_s_at	204093_at	204207_s_at	203565_s_at	211297_s_at	211849_s_at
201803_at	212955_s_at	202355_s_at	202176_at	202451_at	203577_at
213468_at	202635_s_at	212782_x_at			

Authors

Buratowski, S, 2003-10-15 15:18:41

Editors

Schmidt, Esther

2.3. RNA Polymerase II Transcription Pre-Initiation And Promoter Opening (R-HSA-73779)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Formation of the pre-initiation complex

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
202356_s_at	209302_at	206521_s_at	208996_s_at	216711_s_at	209358_at
201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at
202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Reinberg, D, 2003-09-11 07:42:30

Editors

Schmidt, Esther

References

"The general transcription factors of RNA polymerase II.",Genes Dev,10,1997,2657-83.

2.4. Assembly of the pre-replicative complex (R-HSA-68867)

Summation

species name:Homo sapiens,compartment name:cytosol,DNA replication pre-initiation in eukaryotic cells begins with the formation of the pre-replicative complex (pre-RC) during the late M phase and continues in the G1 phase of the mitotic cell cycle, a process also called DNA replication origin licensing. The association of initiation proteins (ORC, Cdc6, Cdt1, Mcm2-7) with the origin of replication in both S. cerevisiae and humans has been demonstrated by chromatin immunoprecipitation experiments. In S. cerevisiae, pre-replicative complexes are assembled from late M to G1. In mammalian cells as well, pre-replicative complexes are assembled from late M to G1, as shown by biochemical fractionation and immunostaining. There are significant sequence similarities among some of the proteins in the pre-replicative complex. The ORC subunits Orc1, Orc4 and Orc5 are homologous to one another and to Cdc6. The six subunits of the Mcm2-7 complex are homologous to one another. In addition, Orc1, Orc4, Orc5, Cdc6, and the Mcm2-7 subunits, are members of the AAA+ superfamily of ATPases. Since the initial identification of these pre-RC components other factors that participate in this complex have been found, including

Cdt1 in human, Xenopus, S. pombe, and S. cerevisiae cells.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
212142_at	201067_at	211746_x_at	203692_s_at	201267_s_at	211212_s_at
207805_s_at	208799_at	201199_s_at	200786_at	200814_at	200820_at
222036_s_at	216237_s_at	201068_s_at	203396_at	204947_at	201052_s_at
202107_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
219105_x_at	201762_s_at	203968_s_at	201705_at	202352_s_at	203351_s_at
203693_s_at	201676_x_at	218350_s_at	201317_s_at	201930_at	202753_at
204957_at	214288_s_at	2028_s_at	210460_s_at	202244_at	201274_at
200876_s_at	201555_at	202353_s_at	201400_at	201532_at	209040_s_at
200882_s_at	203352_at	211609_x_at	212296_at	201114_x_at	208795_s_at
201232_s_at	207042_at	209334_s_at	212141_at	210028_s_at	210983_s_at
204853_at	201755_at	200039_s_at	210759_s_at	204279_at	216088_s_at
205085_at	203447_at	208827_at	201233_at	222037_at	201388_at

Authors

Davey, MJ, O'Donnell, M, 2003-06-05 08:03:13

Editors

Schmidt, Esther

References

"Components and dynamics of DNA replication complexes in S. cerevisiae: redistribution of MCM proteins and Cdc45p during S phase.",Cell,91,1997,59-69.

2.5. Formation of HIV elongation complex in the absence of HIV Tat (R-HSA-167152)

Summation

species name:Homo sapiens,compartment name:nucleoplasm

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	214638_s_at	204093_at
203565_s_at	201803_at	212955_s_at	202355_s_at	202176_at	202451_at
213468_at	205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at
206967_at	214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at
203664_s_at	202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at

202823_at	213604_at	204645_at	216241_s_at	202354_s_at	203112_s_at
211297_s_at	200085_s_at	201483_s_at	203577_at	212782_x_at	204096_s_at

Authors

Matthews, L, 2005-10-11 08:34:27

Editors

Shorser, Solomon, 2016-11-07

2.6. Formation of the HIV-1 Early Elongation Complex (R-HSA-167158)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,This HIV-1 event was inferred from the corresponding human RNA Poll II transcription event. The details relevant to HIV-1 are described below. Formation of the early elongation complex involves hypophosphorylation of RNA Pol II CTD by FCP1P protein, association of the DSIF complex with RNA Pol II, and formation of DSIF:NELF:HIV-1 early elongation complex as described below (Mandal et al 2002; Kim et al 2003; Yamaguchi et al 2002).

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	209302_at	208996_s_at	202757_at
213887_s_at	217420_s_at	201480_s_at	214144_at	209520_s_at	201484_at
203664_s_at	222104_x_at	221540_x_at	34225_at	202453_s_at	201517_at
209519_at	209219_at	217854_s_at	202634_at	202354_s_at	203112_s_at
204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at	201483_s_at
202355_s_at	202176_at	202451_at	203577_at	213468_at	205035_at
202635_s_at	201521_s_at	212782_x_at			

Authors

Matthews, L, 2005-10-11 08:40:15

Editors

Shorser, Solomon, 2016-11-07

References

"FCP1, a phosphatase specific for the heptapeptide repeat of the largest subunit of RNA polymerase II, stimulates transcription elongation.",Mol Cell Biol,22,2002,7543-52.

2.7. Formation of the Early Elongation Complex (R-HSA-113418)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Transcription elongation by RNA polymerase II (RNAPII) is controlled by a number of trans-acting transcription elongation factors as well as by cis-acting elements. Transcription elongation is a rate-limiting step for proper mRNA production in which the phosphorylation of Pol II CTD is a crucial biochemical event. The role of CTD phosphorylation in transcription by Pol II is greatly impaired by protein kinase inhibitors such as 5,6-dichloro-1-ribofuranosylbenzimidazole (DRB), which block CTD phosphorylation and induce arrest of elongating Pol II. DRB-sensitive activation Pol II CTD during elongation has enabled the isolation of two sets of factors -Negative Elongation Factors (NELF) and DRB sensitivity inducing factor (DSIF). P-Tefb is a DRB-sensitive, cyclin-dependent CTD kinase composed of Cdk9 that carries out Serine-2 phosphorylation of Pol II CTD during elongation.The mechanism by which DSIF, NELF and P-TEFb act together in Pol II-regulated elongation is yet to be fully understood. Various biochemical evidences point to a model in which DSIF and NELF negatively regulate elongation through interactions with polymerase containing a hypophosphorylated CTD. Subsequent phosphorylation of the Pol II CTD by P-Tefb might promote elongation by inhibiting interactions of DSIF and NELF with the elongation complex.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	209302_at	208996_s_at	202757_at
213887_s_at	217420_s_at	201480_s_at	214144_at	209520_s_at	201484_at
203664_s_at	222104_x_at	221540_x_at	34225_at	202453_s_at	201517_at
209519_at	209219_at	217854_s_at	202634_at	202354_s_at	203112_s_at
204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at	201483_s_at
202355_s_at	202176_at	202451_at	203577_at	213468_at	205035_at
202635_s_at	201521_s_at	212782_x_at			

Authors

Conaway, JW, Conaway, RC, 2003-09-11

Editors

Schmidt, Esther

References

"Control of elongation by RNA polymerase II.",Trends Biochem Sci,25,2000,375-80.

2.8. DNA Replication Pre-Initiation (R-HSA-69002)

Summation

species name:Homo sapiens,compartment name:cytosol,Although, DNA replication occurs in the S phase of the cell cycle, the formation of the DNA replication pre-initiation

complex begins during G1 phase.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	204441_s_at	201053_s_at
201198_s_at	212142_at	201067_at	211746_x_at	203692_s_at	201267_s_at
211212_s_at	207805_s_at	211804_s_at	208799_at	201756_at	201199_s_at
200786_at	200814_at	205053_at	200820_at	222036_s_at	201529_s_at
216237_s_at	201068_s_at	203396_at	204947_at	201052_s_at	202107_s_at
202243_s_at	219485_s_at	201316_at	202659_at	203967_at	204126_s_at
219105_x_at	201762_s_at	201528_at	203968_s_at	201705_at	204252_at
202352_s_at	204510_at	203351_s_at	203693_s_at	201676_x_at	218350_s_at
201317_s_at	204244_s_at	204835_at	201930_at	202753_at	204957_at
214288_s_at	2028_s_at	210460_s_at	202244_at	201274_at	200876_s_at
201555_at	202353_s_at	201400_at	201532_at	209040_s_at	216026_s_at
200882_s_at	203352_at	211609_x_at	212296_at	201114_x_at	208795_s_at
201232_s_at	207042_at	209334_s_at	212141_at	210028_s_at	210983_s_at
204853_at	209507_at	201755_at	200039_s_at	210759_s_at	204279_at
216088_s_at	205085_at	203447_at	208827_at	201233_at	205909_at
222037_at	220651_s_at	201388_at			

Authors

Davey, MJ, O'Donnell, M, 2003-06-05 08:03:13

Editors

Schmidt, Esther

2.9. M/G1 Transition (R-HSA-68874)

Summation

species name:Homo sapiens,compartment name:cytosol,Finally, progression out of mitosis and division of the cell into two daughters (cytokinesis) requires the inactivation of Cyclin B - Cdc2 by ubiquitin-dependent proteolysis of Cyclin A and B, which is regulated by a large E3 ubiquitin ligase complex known as the Anaphase Promoting Complex (APC).The detailed annotation of the M/G1 transition will be completed in a later version of GK.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	204441_s_at	201053_s_at
201198_s_at	212142_at	201067_at	211746_x_at	203692_s_at	201267_s_at
211212_s_at	207805_s_at	211804_s_at	208799_at	201756_at	201199_s_at
200786_at	200814_at	205053_at	200820_at	222036_s_at	201529_s_at
216237_s_at	201068_s_at	203396_at	204947_at	201052_s_at	202107_s_at

202243_s_at	219485_s_at	201316_at	202659_at	203967_at	204126_s_at
219105_x_at	201762_s_at	201528_at	203968_s_at	201705_at	204252_at
202352_s_at	204510_at	203351_s_at	203693_s_at	201676_x_at	218350_s_at
201317_s_at	204244_s_at	204835_at	201930_at	202753_at	204957_at
214288_s_at	2028_s_at	210460_s_at	202244_at	201274_at	200876_s_at
201555_at	202353_s_at	201400_at	201532_at	209040_s_at	216026_s_at
200882_s_at	203352_at	211609_x_at	212296_at	201114_x_at	208795_s_at
201232_s_at	207042_at	209334_s_at	212141_at	210028_s_at	210983_s_at
204853_at	209507_at	201755_at	200039_s_at	210759_s_at	204279_at
216088_s_at	205085_at	203447_at	208827_at	201233_at	205909_at
222037_at	220651_s_at	201388_at			

Authors

Walworth, N, O'Donnell, M, 2003-06-05

Editors

Schmidt, Esther

Reviewers

Manfredi, J, 0000-00-00 00:00:00

2.10. CDT1 association with the CDC6:ORC:origin complex (R-HSA-68827)

Summation

species name:Homo sapiens,compartment name:cytosol,Initiation protein Cdt1 was first identified in X. laevis, where it has been shown to be the second component of licensing factor (RLF-B) and in S. pombe. Cdt1 homologs have been identified in D. melanogaster, humans, and S. cerevisiae. Genetic studies in S. pombe have shown that binding of Cdc6 to chromatin requires the prior binding of Cdc18, the S. pombe homolog of Cdc6. In humans, the function of CDT1 is regulated during the cell cycle by its tight association with an inhibitory factor, geminin.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	211212_s_at	207805_s_at	208799_at
201199_s_at	200786_at	200814_at	200820_at	201068_s_at	203396_at
201052_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
219105_x_at	201762_s_at	203968_s_at	201705_at	202352_s_at	203351_s_at
201676_x_at	218350_s_at	201317_s_at	202753_at	204957_at	214288_s_at
210460_s_at	202244_at	201274_at	200876_s_at	202353_s_at	201400_at
201532_at	209040_s_at	200882_s_at	203352_at	211609_x_at	212296_at

201114_x_at	201232_s_at	209334_s_at	210028_s_at	204853_at	200039_s_at
210759_s_at	204279_at	216088_s_at	205085_at	203447_at	208827_at
201233_at	201388_at				

Authors

Davey, MJ, O'Donnell, M, 2003-06-05 08:03:13

Editors

Weiser, Joel, 2017-09-13

References

"Initiation of DNA replication in eukaryotic cells.",Annu Rev Cell Dev Biol,13,1998,293-332.

2.11. Regulation of DNA replication (R-HSA-69304)

Summation

species name:Homo sapiens,compartment name:cytosol,DNA replication is regulated at various levels via ORC proteins. This pathway includes annotation of individual events that lead to the regulation of replication.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
212142_at	201067_at	211746_x_at	203692_s_at	201267_s_at	211212_s_at
207805_s_at	211804_s_at	208799_at	201199_s_at	200786_at	200814_at
200820_at	222036_s_at	216237_s_at	201068_s_at	203132_at	203396_at
204947_at	201052_s_at	202107_s_at	202243_s_at	219485_s_at	201316_at
202659_at	203967_at	219105_x_at	201762_s_at	203968_s_at	201705_at
204252_at	202352_s_at	203418_at	203351_s_at	203693_s_at	201676_x_at
218350_s_at	201317_s_at	201930_at	202753_at	205899_at	204957_at
214288_s_at	2028_s_at	210460_s_at	211540_s_at	202244_at	213226_at
201274_at	200876_s_at	201555_at	202353_s_at	201400_at	201532_at
209040_s_at	200882_s_at	203352_at	211609_x_at	212296_at	201114_x_at
208795_s_at	201232_s_at	207042_at	209334_s_at	212141_at	210028_s_at
210983_s_at	204853_at	201755_at	200039_s_at	210759_s_at	204279_at
216088_s_at	205085_at	203447_at	208827_at	201233_at	222037_at
220651_s_at	201388_at				

Authors

Catlett, M, Forsburg, S, 2003-06-05 08:03:27

Editors

Schmidt, Esther

Reviewers

Manfredi, J, 0000-00-00 00:00:00

2.12. Activation of the pre-replicative complex (R-HSA-68962)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,In S. cerevisiae, two ORC subunits, Orc1 and Orc5, both bind ATP, and Orc1 in addition has ATPase activity. Both ATP binding and ATP hydrolysis appear to be essential functions in vivo. ATP binding by Orc1 is unaffected by the association of ORC with origin DNA (ARS) sequences, but ATP hydrolysis is ARS-dependent, being suppressed by associated double-stranded DNA and stimulated by associated single-stranded DNA. These data are consistent with the hypothesis that ORC functions as an ATPase switch, hydrolyzing bound ATP and changing state as DNA unwinds at the origin immediately before replication. It is attractive to speculate that ORC likewise functions as a switch as human pre-replicative complexes are activated, but human Orc proteins are not well enough characterized to allow the model to be critically tested. mRNAs encoding human orthologs of all six Orc proteins have been cloned, and ATP-binding amino acid sequence motifs have been identified in Orc1, Orc4, and Orc5. Interactions among proteins expressed from the cloned genes have been characterized, but the ATP-binding and hydrolyzing properties of these proteins and complexes of them have not been determined.

List of identifiers was found at this pathway

204441_s_at	212142_at	204244_s_at	204835_at	201930_at	211212_s_at
211804_s_at	204957_at	201756_at	205053_at	222036_s_at	201529_s_at
216237_s_at	201555_at	216026_s_at	203352_at	208795_s_at	202107_s_at
212141_at	210028_s_at	203967_at	204126_s_at	219105_x_at	210983_s_at
201528_at	203968_s_at	204853_at	209507_at	201755_at	204252_at
205085_at	204510_at	205909_at	222037_at	203351_s_at	220651_s_at

Authors

Davey, MJ, O'Donnell, M, 2003-06-05 08:03:13

Editors

Schmidt, Esther

References

"ORC5L, a new member of the human origin recognition complex, is deleted in uterine leiomyomas and malignant myeloid diseases.",J Biol Chem,273,1998,27137-45.

2.13. Formation of HIV-1 elongation complex containing HIV-1 Tat (R-HSA-167200)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,This HIV-1 event was inferred from the corresponding human RNA Poll II transcription event in Reactome. The details relevant to HIV-1 are described below. For a more detailed description of the general mechanism, see the link to the corresponding RNA Pol II transcription event below.
The formation of the HIV-1 elongation complex involves Tat mediated recruitment of P-TEFb(Cyclin T1:Cdk9) to the TAR sequence (Wei et al, 1998) and P-TEFb(Cyclin T1:Cdk9) mediated phosphorylation of the RNA Pol II CTD as well as the negative transcriptional elongation factors DSIF and NELF (Herrmann, 1995; Ivanov et al. 2000; Fujinaga et al. 2004; Zhou et al., 2004).

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	204093_at	203565_s_at
201803_at	212955_s_at	202355_s_at	202176_at	202451_at	213468_at
205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at	206967_at
214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at	203664_s_at
202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at	202823_at
213604_at	216241_s_at	202354_s_at	203112_s_at	211297_s_at	200085_s_at
201483_s_at	203577_at	212782_x_at	204096_s_at		

Authors

Matthews, L, 2005-10-12 16:55:39

Editors

Shorser, Solomon, 2016-11-07

References

"Lentivirus Tat proteins specifically associate with a cellular protein kinase, TAK, that hyperphosphorylates the carboxyl-terminal domain of the large subunit of RNA polymerase II: candidate for a Tat cofactor",J Virol,69,1995,1612-20.

2.14. Removal of licensing factors from origins (R-HSA-69300)

Summation

species name:Homo sapiens,compartment name:cytosol,Licensing factors are removed from the origin by various means like biochemical modification (phosphorylation) or by physical association with other proteins. This pathway includes the annotations of events in which the fates of different proteins at the origin are outlined.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
212142_at	201067_at	211746_x_at	201267_s_at	211212_s_at	207805_s_at
211804_s_at	208799_at	201199_s_at	200786_at	200814_at	200820_at
222036_s_at	216237_s_at	201068_s_at	203132_at	203396_at	201052_s_at
202107_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
219105_x_at	201762_s_at	203968_s_at	201705_at	204252_at	202352_s_at
203418_at	203351_s_at	201676_x_at	218350_s_at	201317_s_at	201930_at
202753_at	205899_at	204957_at	214288_s_at	210460_s_at	211540_s_at
202244_at	213226_at	201274_at	200876_s_at	201555_at	202353_s_at
201400_at	201532_at	209040_s_at	200882_s_at	203352_at	211609_x_at
212296_at	201114_x_at	208795_s_at	201232_s_at	209334_s_at	212141_at
210028_s_at	210983_s_at	204853_at	201755_at	200039_s_at	210759_s_at
204279_at	216088_s_at	205085_at	203447_at	208827_at	201233_at
222037_at	220651_s_at	201388_at			

Editors

Schmidt, Esther

2.15. p53-Independent G1/S DNA damage checkpoint (R-HSA-69613)

Summation

species name:Homo sapiens,The G1 arrest induced by DNA damage has been ascribed to the transcription factor and tumor suppressor protein p53. To be effective within minutes after DNA damage, induction of the G1 block should exploit transcription and protein synthesis independent mechanisms.Upon exposure to ultraviolet light (UV) or ionizing radiation (IR), the abundance and activity of a protein, Cdc25A, rapidly decreases; this DNA damage response is not dependent on p53. The rapid destruction of Cdc25A phosphatase prevents entry of a cell into S-phase, by maintaining the CyclinE:Cdk2 complexes in their T14Y15 phosphorylated form.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	210416_s_at	200820_at	201068_s_at	203396_at
201052_s_at	202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at

205394_at	201705_at	202352_s_at	210858_x_at	201676_x_at	201317_s_at
202753_at	214288_s_at	210460_s_at	202244_at	201274_at	200876_s_at
202353_s_at	201400_at	201532_at	209040_s_at	200882_s_at	211609_x_at
212296_at	205393_s_at	201114_x_at	204695_at	208442_s_at	201232_s_at
209334_s_at	200039_s_at	210759_s_at	204279_at	216088_s_at	203447_at
204696_s_at	208827_at	201233_at	201388_at		

Authors

Hoffmann, I, 2003-06-05 08:03:42

Editors

Schmidt, Esther

References

"Rapid destruction of human Cdc25A in response to DNA damage.",Science,288,2000,1425-9.

2.16. p53-Independent DNA Damage Response (R-HSA-69610)

Summation

species name:Homo sapiens,In response to DNA damage due to exposure to ultraviolet light or to ionizing radiation, Cdc25A is phosphorylated by Chk1 or Chk2. The phosphorylation of Cdc25A at ser-123, in response to DNA damage from ionizing radiation is a signal for ubiquitination and subsequent degradation of Cdc25A. The destruction of Cdc25A prevents the normal G1/S transition. Cdc25A is required for the activation of the Cyclin E:Cdk2 complexes via dephosphorylation.Chk1 is activated in response to DNA damage due to uv light. However, the phosphorylation occurs at a different site.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	210416_s_at	200820_at	201068_s_at	203396_at
201052_s_at	202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at
205394_at	201705_at	202352_s_at	210858_x_at	201676_x_at	201317_s_at
202753_at	214288_s_at	210460_s_at	202244_at	201274_at	200876_s_at
202353_s_at	201400_at	201532_at	209040_s_at	200882_s_at	211609_x_at
212296_at	205393_s_at	201114_x_at	204695_at	208442_s_at	201232_s_at
209334_s_at	200039_s_at	210759_s_at	204279_at	216088_s_at	203447_at
204696_s_at	208827_at	201233_at	201388_at		

Authors

Hoffmann, I, 2003-06-05 08:03:42

Editors

Schmidt, Esther

References

"The ATM-Chk2-Cdc25A checkpoint pathway guards against radioresistant DNA synthesis.",Nature,410,2001,842-7.

2.17. Ubiquitin Mediated Degradation of Phosphorylated Cdc25A (R-HSA-69601)

Summation

species name:Homo sapiens,cdc25A protein is degraded by the ubiquitin-proteasome machinery in both terminally differentiating and cycling cells (Bernardi et al. 2000).

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	210416_s_at	200820_at	201068_s_at	203396_at
201052_s_at	202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at
205394_at	201705_at	202352_s_at	210858_x_at	201676_x_at	201317_s_at
202753_at	214288_s_at	210460_s_at	202244_at	201274_at	200876_s_at
202353_s_at	201400_at	201532_at	209040_s_at	200882_s_at	211609_x_at
212296_at	205393_s_at	201114_x_at	204695_at	208442_s_at	201232_s_at
209334_s_at	200039_s_at	210759_s_at	204279_at	216088_s_at	203447_at
204696_s_at	208827_at	201233_at	201388_at		

Authors

Hoffmann, I, 2003-06-05 08:03:42

Editors

Schmidt, Esther

References

"Cdc25A stability is controlled by the ubiquitin-proteasome pathway during cell cycle progression and terminal differentiation",Oncogene,19,2000,2447-54.

2.18. Switching of origins to a post-replicative state (R-HSA-69052)

Summation

species name:Homo sapiens,compartment name:cytosol

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
212142_at	201067_at	211746_x_at	201267_s_at	211212_s_at	207805_s_at
211804_s_at	208799_at	201199_s_at	200786_at	200814_at	200820_at
222036_s_at	216237_s_at	201068_s_at	203132_at	203396_at	201052_s_at
202107_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
219105_x_at	201762_s_at	203968_s_at	201705_at	204252_at	202352_s_at
203418_at	203351_s_at	201676_x_at	201317_s_at	201930_at	202753_at
205899_at	204957_at	214288_s_at	210460_s_at	211540_s_at	202244_at
213226_at	201274_at	200876_s_at	201555_at	202353_s_at	201400_at
201532_at	209040_s_at	200882_s_at	203352_at	211609_x_at	212296_at
201114_x_at	208795_s_at	201232_s_at	209334_s_at	212141_at	210028_s_at
210983_s_at	204853_at	201755_at	200039_s_at	210759_s_at	204279_at
216088_s_at	205085_at	203447_at	208827_at	201233_at	222037_at
201388_at					

Editors

Schmidt, Esther

2.19. Orc1 removal from chromatin (R-HSA-68949)

Summation

species name:Homo sapiens,compartment name:cytosol

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
212142_at	201067_at	211746_x_at	201267_s_at	211212_s_at	207805_s_at
211804_s_at	208799_at	201199_s_at	200786_at	200814_at	200820_at
222036_s_at	216237_s_at	201068_s_at	203132_at	203396_at	201052_s_at
202107_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
219105_x_at	201762_s_at	203968_s_at	201705_at	204252_at	202352_s_at
203418_at	203351_s_at	201676_x_at	201317_s_at	201930_at	202753_at
205899_at	204957_at	214288_s_at	210460_s_at	211540_s_at	202244_at
213226_at	201274_at	200876_s_at	201555_at	202353_s_at	201400_at
201532_at	209040_s_at	200882_s_at	203352_at	211609_x_at	212296_at

201114_x_at	208795_s_at	201232_s_at	209334_s_at	212141_at	210028_s_at
210983_s_at	204853_at	201755_at	200039_s_at	210759_s_at	204279_at
216088_s_at	205085_at	203447_at	208827_at	201233_at	222037_at
201388_at					

Editors

Weiser, Joel, 2017-09-13

References

"Identification of a binding region for human origin recognition complex proteins 1 and 2 that coincides with an origin of DNA replication.",Mol Cell Biol,22,2002,1036-48.

2.20. RNA Polymerase II HIV Promoter Escape (R-HSA-167162)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,RNA Polymerase II promoter escape occurs after the first phosphodiester bond has been created.

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
202356_s_at	209302_at	206521_s_at	208996_s_at	216711_s_at	209358_at
201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at
202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Matthews, L, 2005-10-11 08:40:35

Editors

Shorser, Solomon, 2016-11-07

2.21. RNA Polymerase II Promoter Escape (R-HSA-73776)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,RNA Polymerase II promoter escape occurs after the first phosphodiester bond has been created.

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
202356_s_at	209302_at	206521_s_at	208996_s_at	216711_s_at	209358_at
201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at
202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Timmers, H. T. M., 2003-09-11 07:42:30

Editors

Schmidt, Esther

References

"Three transitions in the RNA polymerase II transcription complex during initiation.",EMBO J,16,1998,7468-80.

2.22. HIV Transcription Initiation (R-HSA-167161)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Formation of the open complex exposes the template strand to the catalytic center of the RNA polymerase II enzyme. This facilitates formation of the first phosphodiester bond, which marks transcription initiation. As a result of this, the TFIIB basal transcription factor dissociates from the initiation complex.The open transcription initiation complex is unstable and can revert to the closed state. Initiation at this stage requires continued (d)ATP-hydrolysis by TFIIH. Dinucleotide transcripts are not stably associated with the transcription complex. Upon dissociation they form abortive products. The transcription complex is also sensitive to inhibition by small oligo-nucleotides. Dinucleotides complementary to position -1 and +1 in the template can also direct first phosphodiester bond formation. This reaction is independent on the basal transcription factors TFIIE and TFIIH and does not involve open complex formation. This reaction is sensitive to inhibition by single-stranded oligonucleotides.

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
202356_s_at	209302_at	206521_s_at	208996_s_at	216711_s_at	209358_at
201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at

202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Matthews, L, 2005-10-11 08:40:35

Editors

Shorser, Solomon, 2016-11-07

2.23. RNA Polymerase II Transcription Initiation (R-HSA-75953)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Formation of the open complex exposes the template strand to the catalytic center of the RNA polymerase II enzyme. This facilitates formation of the first phosphodiester bond, which marks transcription initiation. As a result of this, the TFIIB basal transcription factor dissociates from the initiation complex.The open transcription initiation complex is unstable and can revert to the closed state. Initiation at this stage requires continued (d)ATP-hydrolysis by TFIIH. Dinucleotide transcripts are not stably associated with the transcription complex. Upon dissociation they form abortive products. The transcription complex is also sensitive to inhibition by small oligo-nucleotides. Dinucleotides complementary to position -1 and +1 in the template can also direct first phosphodiester bond formation. This reaction is independent on the basal transcription factors TFIIE and TFIIH and does not involve open complex formation. This reaction is sensitive to inhibition by single-stranded oligonucleotides.

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
202356_s_at	209302_at	206521_s_at	208996_s_at	216711_s_at	209358_at
201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at
202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Timmers, H. T. M., 2003-09-11 07:42:30

Editors

Schmidt, Esther

References

"Abortive initiation by RNA polymerase II in vitro at the adenovirus 2 major late promoter.",J Biol Chem,262,1987,14990-7.

2.24. Activation of ATR in response to replication stress (R-HSA-176187)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Genotoxic stress caused by DNA damage or stalled replication forks can lead to genomic instability. To guard against such instability, genotoxically-stressed cells activate checkpoint factors that halt or slow cell cycle progression. Among the pathways affected are DNA replication by reduction of replication origin firing, and mitosis by inhibiting activation of cyclin-dependent kinases (Cdks). A key factor involved in the response to stalled replication forks is the ATM- and rad3-related (ATR) kinase, a member of the phosphoinositide-3-kinase-related kinase (PIKK) family. Rather than responding to particular lesions in DNA, ATR and its binding partner ATRIP (ATR-interacting protein) sense replication fork stalling indirectly by associating with persistent ssDNA bound by RPA. These structures would be formed, for example, by dissociation of the replicative helicase from the leading or lagging strand DNA polymerase when the polymerase encounters a DNA lesion that blocks DNA synthesis. Along with phosphorylating the downstream transducer kinase Chk1 and the tumor suppressor p53, activated ATR modifies numerous factors that regulate cell cycle progression or the repair of DNA damage. The persistent ssDNA also stimulates recruitment of the RFC-like Rad17-Rfc2-5 alternative clamp-loading complex, which subsequently loads the Rad9-Hus1-Rad1 complex onto the DNA. The latter '9-1-1' complex serves to facilitate Chk1 binding to the stalled replication fork, where Chk1 is phosphorylated by ATR and thereby activated. Upon activation, Chk1 can phosphorylate additional substrates including the Cdc25 family of phosphatases (Cdc25A, Cdc25B, and Cdc25C). These enzymes catalyze the removal of inhibitory phosphate residues from cyclin-dependent kinases (Cdks), allowing their activation. In particular, Cdc25A primarily functions at the G1/S transition to dephosphorylate Cdk2 at Thr 14 and Tyr 15, thus positively regulating the Cdk2-cyclin E complex for S-phase entry. Cdc25A also has mitotic functions. Phosphorylation of Cdc25A at Ser125 by Chk1 leads to Cdc25A ubiquitination and degradation, thus inhibiting DNA replication origin firing. In contrast, Cdc25B and Cdc25C regulate the onset of mitosis through dephosphorylation and activation of Cdk1-cyclin B complexes. In response to replication stress, Chk1 phosphorylates Cdc25B and Cdc25C leading to Cdc25B/C complex formation with 14-3-3 proteins. As these complexes are sequestered in the cytoplasm, they are unable to activate the nuclear Cdk1-cyclin B complex for mitotic entry.These events are outlined in the figure. Persistent single-stranded DNA associated with RPA binds claspin (A) and ATR:ATRIP (B), leading to claspin phosphorylation (C). In parallel, the same single-stranded DNA:RPA

complex binds RAD17:RFC (D), enabling the loading of RAD9:HUS1:RAD1 (9-1-1) complex onto the DNA (E). The resulting complex of proteins can then repeatedly bind (F) and phosphorylate (G) CHK1, activating multiple copies of CHK1.

List of identifiers was found at this pathway

204023_at	204128_s_at	212142_at	204244_s_at	201930_at	211212_s_at
211804_s_at	204957_at	201756_at	203209_at	222036_s_at	201529_s_at
216237_s_at	205167_s_at	201555_at	203352_at	205393_s_at	1053_at
203696_s_at	204695_at	208795_s_at	202107_s_at	212141_at	210028_s_at
217010_s_at	203967_at	204126_s_at	204127_at	219105_x_at	210983_s_at
201528_at	203968_s_at	204853_at	205394_at	209507_at	201755_at
204252_at	203210_s_at	205085_at	204510_at	204696_s_at	222037_at
203351_s_at	220651_s_at				

Authors

D'Eustachio, P, 2006-03-03 16:44:08

Editors

Schmidt, Esther

References

"Sensing DNA damage through ATRIP recognition of RPA-ssDNA complexes",Science,300,2003,1542-8.

2.25. Ubiquitin-dependent degradation of Cyclin D1 (R-HSA-69229)

Summation

species name:Homo sapiens,After the Cyclin D serves the role of mediating reactions by Cdk4 and Cdk6, it is shuttled to the cytoplasm and degraded in a ubiquitin-dependent manner. Whether Cdk4 and Cdk6 are truly redundant is a topic still under investigation, although both the kinases are required for normal cell cycle progression.Destruction of the D type cyclins accompanies the end of the G1 phase, and the E type cyclins are involved in transition of the cell from G1 to S phase.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	200820_at	201068_s_at	203396_at	201052_s_at
202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at	202246_s_at
201705_at	202352_s_at	208712_at	201676_x_at	201317_s_at	202753_at
214288_s_at	210460_s_at	202244_at	201274_at	200876_s_at	202353_s_at

201400_at	201532_at	209040_s_at	208711_s_at	200882_s_at	211609_x_at
212296_at	201114_x_at	201232_s_at	209334_s_at	200039_s_at	210759_s_at
204279_at	216088_s_at	203447_at	208827_at	201233_at	201388_at

Authors

Walworth, N, O'Donnell, M, 2003-06-05

Editors

Schmidt, Esther

2.26. Ubiquitin-dependent degradation of Cyclin D (R-HSA-75815)

Summation

species name:Homo sapiens,Cyclin D turnover is regulated by ubiquitination and proteasomal degradation which are positively regulated by cyclin D phosphorylation on threonine-286 (Diehl et al., 1997).

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	200820_at	201068_s_at	203396_at	201052_s_at
202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at	202246_s_at
201705_at	202352_s_at	208712_at	201676_x_at	201317_s_at	202753_at
214288_s_at	210460_s_at	202244_at	201274_at	200876_s_at	202353_s_at
201400_at	201532_at	209040_s_at	208711_s_at	200882_s_at	211609_x_at
212296_at	201114_x_at	201232_s_at	209334_s_at	200039_s_at	210759_s_at
204279_at	216088_s_at	203447_at	208827_at	201233_at	201388_at

Authors

Walworth, N, O'Donnell, M, 2003-06-05

Editors

Schmidt, Esther

References

"Inhibition of cyclin D1 phosphorylation on threonine-286 prevents its rapid degradation via the ubiquitin-proteasome pathway",Genes Dev,11,1997,957-72.

2.27. CDK-mediated phosphorylation and removal of Cdc6 (R-HSA-69017)

Summation

species name:Homo sapiens,compartment name:cytosol,As cells enter S phase, HsCdc6p is phosphorylated by CDK promoting its export from the nucleus (see Bell and Dutta 2002).

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	211804_s_at	208799_at
201199_s_at	200786_at	200814_at	200820_at	201068_s_at	203396_at
201052_s_at	202243_s_at	219485_s_at	201316_at	202659_at	203967_at
201762_s_at	203968_s_at	201705_at	204252_at	202352_s_at	201676_x_at
201317_s_at	202753_at	214288_s_at	210460_s_at	202244_at	201274_at
200876_s_at	202353_s_at	201400_at	201532_at	209040_s_at	200882_s_at
211609_x_at	212296_at	201114_x_at	201232_s_at	209334_s_at	200039_s_at
210759_s_at	204279_at	216088_s_at	203447_at	208827_at	201233_at
201388_at					

Editors

Schmidt, Esther

References

"Chromatin association of human origin recognition complex, cdc6, and minichromosome maintenance proteins during the cell cycle: assembly of prereplication complexes in late mitosis.",Mol Cell Biol,20,2000,8602-12.

2.28. mRNA Capping (R-HSA-72086)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,The 5'-ends of all eukaryotic pre-mRNAs studied thus far are converted to cap structures. The cap is thought to influence splicing of the first intron, and is bound by 'cap-binding' proteins, CBP80 and CBP20, in the nucleus. The cap is important for translation initiation, and it also interacts with the poly(A)terminus, via proteins, resulting in circularization of the mRNA to facilitate multiple rounds of translation. The cap is also important for mRNA stability, protecting it from 5' to 3' nucleases, and is required for mRNA export to the cytoplasm.The capping reaction usually occurs very rapidly on nascent transcripts; after the synthesis of only a few nucleotides by RNA polymerase II. The capping reaction involves the conversion of the 5'-end of the nascent transcript from a triphosphate to a diphosphate by a RNA 5'-triphosphatase, followed by the addition of a guanosine monophosphate by the mRNA guanylyltransferase, to form a 5'-5'-triphosphate linkage. This cap is then methylated by 2'-O-methyltransferases.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	209302_at	208996_s_at	204208_at
202683_s_at	213887_s_at	217420_s_at	201480_s_at	214144_at	209520_s_at
202684_s_at	203664_s_at	222104_x_at	221540_x_at	202453_s_at	201517_at
209519_at	217854_s_at	202634_at	202354_s_at	204093_at	204207_s_at
203565_s_at	211297_s_at	211849_s_at	201803_at	212955_s_at	202355_s_at
202176_at	202451_at	203577_at	213468_at	202635_s_at	201521_s_at
212782_x_at					

Authors

Buratowski, S, 2003-10-15 15:18:41

Editors

Schmidt, Esther

References

"The ends of the affair: capping and polyadenylation.",Nat Struct Biol,7,2000,838-42.

2.29. Regulation of ornithine decarboxylase (ODC) (R-HSA-350562)

Summation

species name:Homo sapiens,compartment name:cytosol,Polyamines increase the production of antizyme (AZ). The carboxy-terminal half of antizyme interacts with ODC, generating an inactive AZ:ODC heterodimer complex. A carboxy-terminal domain of ODC is exposed only within the heterodimer, and is the target for subsequent degradation. A domain within the amino-terminal portion of antizyme provides a function needed for efficient degradation of ODC by the proteasome. The proteasome cycle starts with the processing of AZ:ODC, sequestering ODC and then degrading it to peptides but releasing AZ. AZ participates in additional rounds of binding and degradation. Antizyme-mediated inhibition and destruction of ODC reduces synthesis of polyamines. Additionally, antizyme also inhibits polyamine transport into the cell. Antizyme production is reduced, completing the regulatory circuit (Coffino, 2001).The following illustration is adapted from a minireview by Pegg, 2006; J. Biol. Chem., Vol. 281, Issue 21, 14529-14532.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	200820_at	201068_s_at	203396_at	201052_s_at
202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at	201705_at
202352_s_at	200790_at	201676_x_at	201317_s_at	202753_at	214288_s_at
210460_s_at	202244_at	201274_at	200876_s_at	202353_s_at	201400_at
201532_at	209040_s_at	200882_s_at	211609_x_at	212296_at	201114_x_at

201232_s_at	209334_s_at	200039_s_at	210759_s_at	204279_at	216088_s_at
203447_at	208827_at	201233_at	201388_at		

Authors

Gopinathrao, G, 2008-05-19 18:50:15

Editors

Schmidt, Esther

Reviewers

D'Eustachio, P, 2008-06-12 17:57:32

References

"Degradation of ornithine decarboxylase by the 26S proteasome",Biochem Biophys Res Commun,267,2000,1-6.

2.30. Transcription of the HIV genome (R-HSA-167172)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Expression of the integrated HIV-1 provirus is dependent on the host cell Pol II transcription machinery, but is regulated in critical ways by HIV-1 Tat and Rev proteins. The long terminal repeats (LTR) located at either end of the proviral DNA contain regulatory sequences that recruit cellular transcription factors. The U3 region of the 5' LTR contains numerous cis-acting elements that regulate Pol II-mediated transcription initiation. The full-length transcript, which encodes nine genes, functions as an mRNA and is packaged as genomic RNA. Smaller (subgenomic) viral mRNAs are generated by alternative splicing. The activities of Tat and Rev create two phases of gene expression (see Karn 1999; Cullen 1991). The Tat protein is an RNA specific trans-activator of LTR-mediated transcription. Association of Tat with TAR, a RNA stem-loop within the RNA leader sequence, is required for efficient elongation of the HIV-1 transcript. In the early phase of viral transcription, a multiply-spliced set of mRNAs is generated, producing the transcripts of the regulatory proteins, Tat, Rev, and Nef. In the late phase, Rev regulates nuclear export of HIV-1 mRNAs, repressing expression of the early regulatory mRNAs and promoting expression of viral structural proteins. Nuclear export of the unspliced and partially spliced late HIV-1 transcripts that encode the structural proteins requires the association of Rev with a cis-acting RNA sequence in the transcripts (Rev Response Element, RRE).

List of identifiers was found at this pathway

213090_s_at	209595_at	202356_s_at	209302_at	209358_at	204208_at
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209520_s_at	201484_at	208545_x_at	222104_x_at	221540_x_at	34225_at
202168_at	202680_at	209519_at	209219_at	202634_at	214638_s_at

204093_at	203565_s_at	211849_s_at	201803_at	212955_s_at	205930_at
202355_s_at	202176_at	202451_at	213468_at	205035_at	202635_s_at
203198_at	201521_s_at	202824_s_at	203135_at	206967_at	205966_at
203572_s_at	209463_s_at	214263_x_at	202819_s_at	206521_s_at	208996_s_at
216711_s_at	202683_s_at	202757_at	201023_at	201480_s_at	210053_at
202684_s_at	203664_s_at	208066_s_at	202818_s_at	202453_s_at	201517_at
200957_s_at	202678_at	217854_s_at	202823_at	213604_at	216226_at
204645_at	216241_s_at	202354_s_at	203112_s_at	204207_s_at	211297_s_at
200085_s_at	201483_s_at	203577_at	212782_x_at	204096_s_at	

Authors

Matthews, L, 2005-10-11 08:41:42

Editors

Shorser, Solomon, 2016-11-07

Reviewers

Peterlin, BM, 2005-01-05 00:00:00

References

"Retroviruses as model systems for the study of nuclear RNA export",Virology,249,1998,203-10.

2.31. RNA Polymerase II Transcription Initiation And Promoter Clearance (R-HSA-76042)

Summation

species name:Homo sapiens,compartment name:nucleoplasm

List of identifiers was found at this pathway

205966_at	203572_s_at	209463_s_at	213090_s_at	214263_x_at	209595_at
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201023_at	213887_s_at	217420_s_at	214144_at	200055_at	210053_at
203664_s_at	208066_s_at	208545_x_at	222104_x_at	221540_x_at	202168_at
202453_s_at	202680_at	202678_at	217854_s_at	202634_at	216226_at
202354_s_at	204093_at	203565_s_at	211297_s_at	201803_at	212955_s_at
205930_at	202355_s_at	202176_at	202451_at	203577_at	213468_at
202635_s_at	212782_x_at	203135_at			

Authors

Kornblihtt, AR, Proudfoot, NJ, 2003-09-11 12:45:33

Editors

Schmidt, Esther

2.32. AUF1 (hnRNP D0) binds and destabilizes mRNA (R-HSA-450408)

Summation

species name:Homo sapiens,compartment name:cytosol,AUF1 (hnRNP D0) dimers bind U-rich regions of AU-rich elements (AREs) in the 3' untranslated regions of mRNAs. The binding causes AUF1 dimers to assemble into higher order tetrameric complexes. Diphosphorylated AUF1 bound to RNA recruits additional proteins, including eIF4G, polyA-binding protein, Hsp, Hsc70, Hsp27, NSEP-1, NSAP-1, and IMP-2 which target the mRNA and AUF1 for degradation. Unphosphorylated AUF1 is thought to be less able to recruit additional proteins. AUF1 also interacts directly or indirectly with HuR and the RNA-induced silencing complex (RISC).AUF1 complexed with RNA and other proteins is ubiquitinated and targeted for destruction by the proteasome while the bound mRNA is degraded. Inhibition of ubiquitin addition to AUF1 blocks mRNA degradation. The mechanism by which ubiquitin-dependent proteolysis is coupled to mRNA degradation is unknown.At least 4 isoforms of AUF1 exist: p45 (45 kDa) contains all exons, p42 lacks exon 2, p40 lacks exon 7, and p37 lacks exons 2 and 7. The presence of exon 7 in p42 and p45 seems to block ubiquitination while the absence of exon 7 (p37 and p40) targets AUF1 for ubiquitination and destabilizes bound RNAs. Lack of exon 2 (p37 and p42) is associated with higher affinity for RNA and 14-3-3sigma (SFN).AUF1 binds and destabilizes mRNAs encoding Interleukin-1 beta (IL1B), Tumor Necrosis Factor alpha (TNFA), Cyclin-dependent kinase inhibitor 1 (CDNK1A, p21), Cyclin-D1 (CCND1), Granulocyte-macrophage colony stimulating factor (GM-CSF, CSF2), inducible Nitric oxide synthase (iNOS, NOS2), Proto-oncogene cFos (FOS), Myc proto-oncogene (MYC), Apoptosis regulator Bcl-2 (BCL2).

List of identifiers was found at this pathway

200073_s_at	200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at
201198_s_at	201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at
201199_s_at	200786_at	200814_at	221480_at	200820_at	208624_s_at
201068_s_at	203396_at	201052_s_at	202243_s_at	219485_s_at	201316_at
202659_at	201762_s_at	208625_s_at	201705_at	209330_s_at	202352_s_at
201676_x_at	201317_s_at	221481_x_at	202753_at	214288_s_at	210460_s_at
202244_at	201274_at	200876_s_at	202353_s_at	201400_at	201532_at
209040_s_at	200882_s_at	211609_x_at	212296_at	201114_x_at	201232_s_at
209334_s_at	200039_s_at	210759_s_at	204279_at	216088_s_at	203447_at
208827_at	201233_at	201388_at			

Authors

May, B, 2009-12-16

Editors

Schmidt, Esther

Reviewers

Wilusz, J, 2010-06-29

References

"Post-transcriptional regulation of gene expression by degradation of messenger RNAs",J Cell Physiol,195,2003,356-72.

2.33. RNA Polymerase III Transcription Initiation (R-HSA-76046)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,There are three basic types of RNA polymerase III promoters. The three types of RNA polymerase III promoters are known as type 1, type 2, and type 3 promoters. Type 1 promoters are found in the 5S genes and consist of a gene-internal element called the internal control region (ICR), that is subdivided into A block, intermediate element, and C block (Bogenhagen, 1985; Sakonju et al., 1980). Type 2 promoters are found in tRNA genes, Adenovirus 2 VAI gene, and other genes (Galli et al., 1981; Sharp et al., 1981). These promoters consists of two gene-internal elements called the A and the B boxes. Type 3 promoters consist of a distal sequence element (DSE) that serves as an enhancer, a proximal sequence element (PSE), and a TATA box (Baer et al., 1989; Lobo and Hernandez, 1989). Some promoters combine elements from type 2 and 3 promoters. For example, the S. cerevisiae U6 promoter, also shown in the figure, contains the TATA box typical of type 3 promoters and the A and B boxes typical of type 2 promoters. Moreover, in S. pombe, nearly all tRNA and 5S genes contain a TATA box in addition to gene-internal elements, and the TATA box is required for transcription.

List of identifiers was found at this pathway

205658_s_at	219459_at	215926_x_at	210620_s_at	209302_at	221873_at
212429_s_at	201338_x_at	210465_s_at	213887_s_at	202320_at	219198_at
218258_at	205443_at	213203_at	205218_at	206789_s_at	35671_at
204001_at	215677_s_at	217854_s_at	202634_at	204104_at	203754_s_at
215091_s_at	204366_s_at	208361_s_at	209317_at	207515_s_at	215676_at
202635_s_at	218016_s_at	218954_s_at	217876_at	203135_at	218343_s_at
218955_at					

Authors

Hernandez, N, 2003-09-11 07:42:29

Editors

Schmidt, Esther

References

"Structure and transcription of a human gene for H1 RNA, the RNA component of human RNase P",Nucleic Acids Res,18,1990,97-103.

2.34. HIV Transcription Elongation (R-HSA-167169)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,In the absence of the HIV-1 protein Tat, transcription of the proviral DNA is inefficient and results in the production of truncated transcripts (Kao et al., 1987). While initiation of transcription from the HIV-1 LTR and formation of the early elongation complex occurs normally, transcription elongation is incomplete with non-processive polymerases disengaging from the proviral DNA template prematurely (reviewed in Karn 1999). The mechanism of Tat-mediated elongation is described below.

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	204093_at	203565_s_at
201803_at	212955_s_at	202355_s_at	202176_at	202451_at	213468_at
205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at	206967_at
214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at	203664_s_at
202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at	202823_at
213604_at	216241_s_at	202354_s_at	203112_s_at	211297_s_at	200085_s_at
201483_s_at	203577_at	212782_x_at	204096_s_at		

Authors

Matthews, L, 2005-10-11 08:41:32

Editors

Shorser, Solomon, 2016-11-07

References

"Regulation of TAK/P-TEFb in CD4+ T lymphocytes and macrophages",Curr HIV Res,1,2003,395-404.

2.35. Tat-mediated elongation of the HIV-1 transcript (R-HSA-167246)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,The Tat protein is a viral transactivator protein that regulates HIV-1 gene expression by controlling RNA Pol II-mediated elongation (reviewed in Karn 1999; Taube et al. 1999; Liou et al. 2004; Barboric and Peterlin 2005). Tat appears to be required in order to overcome the arrest of RNA Pol II by the negative transcriptional elongation factors DSIF and NELF (Wada et al. 1998; Yamaguchi et al. 1999; Yamaguchi et al 2002; Fujinaga et al. 2004). While Pol II can associate with the proviral LTR and initiate transcription in the absence of Tat, these polymerase complexes are non-processive and dissociate from the template prematurely producing very short transcripts (Kao et al. 1987). Tat associates with the RNA element, TAR, which forms a stem loop structure in the leader RNA sequence (Dingwall et al. 1989). Tat also associates with the cellular kinase complex P-TEFb(Cyclin T1:Cdk9) and recruits it to the TAR stem loop structure (Herrmann, 1995) (Wei et al. 1998). This association between Tat, TAR and P-TEFb(Cyclin T1:Cdk9) is believed to bring the catalytic subunit of this kinase complex (Cdk9) in close proximity to Pol II where it hyperphosphorylates the CTD of RNA Pol II (Zhou et al. 2000). The RD subunits of NELF and the SPT5 subunit of DSIF, which associate through RD with the bottom stem of TAR, are also phosphorylated by P-TEFb(Cyclin T1:Cdk9) (Yamaguchi et al. 2002; Fujinaga et al. 2004; Ivanov et al. 2000). Phosphorylation of RD results in its dissociation from TAR. Thus, Tat appears to facilitate transcriptional elongation of the HIV-1 transcript by hyperphosphorylating the RNA Poll II CTD and by removing the negative transcription elongation factors from TAR. In addition, there is evidence that the association of Tat with P-TEFb(Cyclin T1:Cdk9) alters the substrate specificity of P-TEFb enhancing phosphorylation of ser5 residues in the CTD of RNA Pol II (Zhou et al. 2000).

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	204093_at	203565_s_at
201803_at	212955_s_at	202355_s_at	202176_at	202451_at	213468_at
205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at	206967_at
214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at	203664_s_at
202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at	202823_at
213604_at	216241_s_at	202354_s_at	203112_s_at	211297_s_at	200085_s_at
201483_s_at	203577_at	212782_x_at	204096_s_at		

Authors

Matthews, L, 2005-10-13 20:45:52

Editors

Shorser, Solomon, 2016-11-07

References

"Human immunodeficiency virus 1 tat protein binds trans-activation-responsive region (TAR) RNA in vitro",Proc Natl Acad Sci U S A,86,1989,6925-9.

2.36. Dual Incision in GG-NER (R-HSA-5696400)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,Double incision at the damaged DNA strand excises the oligonucleotide that contains the lesion from the open bubble. The excised oligonucleotide is ~27-30 bases long. Incision 5' to the damage site, by ERCC1:ERCC4 endonuclease, precedes the incision 3' to the damage site by ERCC5 endonuclease (Staresincic et al. 2009).

List of identifiers was found at this pathway

204023_at	204128_s_at	201202_at	205672_at	202996_at	201756_at
203209_at	203719_at	201529_s_at	222104_x_at	221540_x_at	202453_s_at
208021_s_at	216026_s_at	202414_at	203409_at	203720_s_at	1053_at
203696_s_at	201115_at	204127_at	201528_at	209507_at	208619_at
210158_at	202176_at	202451_at	203210_s_at	203422_at	203577_at
213468_at	209085_x_at	205909_at	212836_at		

Authors

Orlic-Milacic, Marija, 2015-05-28

Editors

Weiser, Joel, 2017-09-13

Reviewers

Fousteri, Maria, 2015-08-03

References

"Coordination of dual incision and repair synthesis in human nucleotide excision repair",EMBO J.,28,2009,1111-20.

2.37. HIV elongation arrest and recovery (R-HSA-167287)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,RNA Pol II arrest is

believed to be a result of irreversible backsliding of the enzyme by ~7-14 nucleotides. TFIIS reactivates arrested RNA Pol II by promoting the excision of nascent transcript ~7-14 nucleotides upstream of the 3' end.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	202819_s_at	209302_at	208996_s_at
202757_at	204095_s_at	213887_s_at	200956_s_at	217420_s_at	201480_s_at
214144_at	201484_at	203664_s_at	202818_s_at	34225_at	200957_s_at
209219_at	217854_s_at	202823_at	202634_at	213604_at	214638_s_at
204645_at	216241_s_at	202354_s_at	203112_s_at	201803_at	212955_s_at
200085_s_at	201483_s_at	202355_s_at	205035_at	202635_s_at	203198_at
212782_x_at	202824_s_at	204096_s_at	206967_at		

Authors

Matthews, L, 2005-10-13 21:12:31

Editors

Gillespie, Marc E, 2017-04-19

2.38. Pausing and recovery of HIV elongation (R-HSA-167290)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,After Pol II pauses by back tracking 2 -4 nuleotides on the HIV-1 template, elongation of the HIV-1 transcript resumes.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	202819_s_at	209302_at	208996_s_at
202757_at	204095_s_at	213887_s_at	200956_s_at	217420_s_at	201480_s_at
214144_at	201484_at	203664_s_at	202818_s_at	34225_at	200957_s_at
209219_at	217854_s_at	202823_at	202634_at	213604_at	214638_s_at
204645_at	216241_s_at	202354_s_at	203112_s_at	201803_at	212955_s_at
200085_s_at	201483_s_at	202355_s_at	205035_at	202635_s_at	203198_at
212782_x_at	202824_s_at	204096_s_at	206967_at		

Authors

Matthews, L, 2005-10-13 21:12:51

Editors

Shorser, Solomon, 2016-11-07

2.39. Tat-mediated HIV elongation arrest and recovery (R-HSA-167243)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,RNA Pol II arrest is believed to be a result of irreversible backsliding of the enzyme by ~7-14 nucleotides. TFIIS reactivates arrested RNA Pol II by promoting the excision of nascent transcript ~7-14 nucleotides upstream of the 3' end.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	202819_s_at	209302_at	208996_s_at
202757_at	204095_s_at	213887_s_at	200956_s_at	217420_s_at	201480_s_at
214144_at	201484_at	203664_s_at	202818_s_at	34225_at	200957_s_at
209219_at	217854_s_at	202823_at	202634_at	213604_at	216241_s_at
202354_s_at	203112_s_at	201803_at	212955_s_at	200085_s_at	201483_s_at
202355_s_at	205035_at	202635_s_at	203198_at	212782_x_at	202824_s_at
204096_s_at	206967_at				

Authors

Matthews, L, 2005-10-13 20:42:34

Editors

Gillespie, Marc E, 2017-04-19

2.40. Pausing and recovery of Tat-mediated HIV elongation (R-HSA-167238)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,After Pol II pauses by back tracking 2 -4 nuleotides on the HIV-1 template, elongation of the HIV-1 transcript resumes.

List of identifiers was found at this pathway

214263_x_at	209595_at	202356_s_at	202819_s_at	209302_at	208996_s_at
202757_at	204095_s_at	213887_s_at	200956_s_at	217420_s_at	201480_s_at
214144_at	201484_at	203664_s_at	202818_s_at	34225_at	200957_s_at
209219_at	217854_s_at	202823_at	202634_at	213604_at	216241_s_at
202354_s_at	203112_s_at	201803_at	212955_s_at	200085_s_at	201483_s_at
202355_s_at	205035_at	202635_s_at	203198_at	212782_x_at	202824_s_at
204096_s_at	206967_at				

Authors

Matthews, L, 2005-10-13 20:09:16

Editors

Shorser, Solomon, 2016-11-07

2.41. Gap-filling DNA repair synthesis and ligation in TC-NER (R-HSA-6782210)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,In transcription-coupled nucleotide excision repair (TC-NER), similar to global genome nucleotide excision repair (GG-NER), DNA polymerases delta or epsilon, or the Y family DNA polymerase kappa, fill in the single stranded gap that remains after dual incision. DNA ligases LIG1 or LIG3, the latter in complex with XRCC1, subsequently seal the single stranded nick by ligating the 3' end of the newly synthesized patch with the 5' end of incised DNA (Moser et al. 2007, Staresincic et al. 2009, Ogi et al. 2010).

List of identifiers was found at this pathway

209302_at	218110_at	213887_s_at	207347_at	202996_at	217420_s_at
202726_at	214144_at	201756_at	203209_at	201529_s_at	222104_x_at
205162_at	221540_x_at	203696_s_at	202634_at	201115_at	204093_at
203565_s_at	201528_at	201803_at	212955_s_at	202176_at	202451_at
213468_at	202635_s_at	209085_x_at	214263_x_at	204023_at	204128_s_at
201202_at	208996_s_at	204123_at	203664_s_at	202453_s_at	208021_s_at
216026_s_at	217854_s_at	1053_at	207348_s_at	216241_s_at	204127_at
211297_s_at	209507_at	208619_at	203210_s_at	203422_at	203577_at
212782_x_at	205909_at	212836_at	203655_at		

Authors

Orlic-Milacic, Marija, 2015-06-05

Editors

Weiser, Joel, 2017-09-13

Reviewers

Fousteri, Maria, 2015-08-03

References

"Coordination of dual incision and repair synthesis in human nucleotide excision repair",EMBO J.,28,2009,1111-20.

2.42. RNA Polymerase II Pre-transcription Events (R-HSA-674695)

Summation

species name:Homo sapiens,compartment name:nucleoplasm

List of identifiers was found at this pathway

213090_s_at	209595_at	202356_s_at	209302_at	209358_at	204095_s_at
213887_s_at	200956_s_at	217420_s_at	214144_at	200055_at	209520_s_at
201484_at	208545_x_at	222104_x_at	221540_x_at	34225_at	202168_at
202680_at	209519_at	209219_at	202634_at	214638_s_at	204093_at
203565_s_at	201803_at	212955_s_at	205930_at	202355_s_at	202176_at
202451_at	213468_at	205035_at	202635_s_at	203198_at	201521_s_at
202824_s_at	203135_at	206967_at	205966_at	203572_s_at	209463_s_at
214263_x_at	202819_s_at	206521_s_at	208996_s_at	216711_s_at	202757_at
201023_at	201480_s_at	210053_at	203664_s_at	208066_s_at	202818_s_at
202453_s_at	201517_at	200957_s_at	202678_at	217854_s_at	202823_at
213604_at	216226_at	204645_at	216241_s_at	202354_s_at	203112_s_at
211297_s_at	200085_s_at	201483_s_at	203577_at	212782_x_at	204096_s_at

Authors

Gillespie, ME, 2010-05-05

Editors

Schmidt, Esther

2.43. Dual incision in TC-NER (R-HSA-6782135)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,In transcription-coupled nucleotide excision repair (TC-NER), similar to global genome nucleotide excision repair (GG-NER), the oligonucleotide that contains the lesion is excised from the open bubble structure via dual incision of the affected DNA strand. 5' incision by the ERCC1:ERCC4 (ERCC1:XPF) endonuclease precedes 3' incision by ERCC5 (XPG) endonuclease. In order for the TC-NER pre-incision complex to assemble and the endonucleases to incise the damaged DNA strand, the RNA polymerase II (RNA Pol II) complex has to backtrack - reverse translocate from the damage site. Although the mechanistic details of this process are largely unknown in mammals, it may involve ERCC6/ERCC8-mediated chromatin remodelling/ubiquitination events, the DNA helicase activity of the TFIIH complex and TCEA1 (TFIIS)-stimulated cleavage of the 3' protruding end

of nascent mRNA by RNA Pol II (Donahue et al. 1994, Lee et al. 2002, Sarker et al. 2005, Vermeulen and Fousteri 2013, Hanawalt and Spivak 2008, Staresincic et al. 2009, Epshtein et al. 2014).

List of identifiers was found at this pathway

209302_at	218110_at	205672_at	213887_s_at	207347_at	202996_at
217420_s_at	214144_at	201756_at	203209_at	203719_at	201529_s_at
222104_x_at	205162_at	221540_x_at	203696_s_at	202634_at	201115_at
204093_at	203565_s_at	201528_at	201803_at	212955_s_at	210158_at
202176_at	202451_at	213468_at	202635_s_at	209085_x_at	214263_x_at
204023_at	204128_s_at	201202_at	208996_s_at	203664_s_at	202453_s_at
208021_s_at	216026_s_at	217854_s_at	202414_at	203720_s_at	1053_at
216241_s_at	204127_at	211297_s_at	209507_at	208619_at	203210_s_at
203422_at	203577_at	212782_x_at	205909_at	212836_at	

Authors

Orlic-Milacic, Marija, 2015-06-04

Editors

Weiser, Joel, 2017-09-13

Reviewers

Fousteri, Maria, 2015-08-03

References

"Transcription-coupled and DNA damage-dependent ubiquitination of RNA polymerase II in vitro",Proc. Natl. Acad. Sci. U.S.A.,99,2002,4239-44.

2.44. Formation of RNA Pol II elongation complex (R-HSA-112382)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,TFIIS is a transcription factor involved in different phases of transcription, occurring in a major ubiquitous form and other tissue specific forms. TFIIS stimulates RNA Pol II complex out of elongation arrest. Other transcription factors like ELL, Elongin family members and TFIIF interact directly with elongating Pol II and increase its elongation rate. These factors have been observed to act on naked DNA templates by suppressing transient pausing by the enzyme at all or most steps of nucleotide addition. In Drosophila, ELL is found at a large number of transcriptionally active sites on polytene chromosomes. In general, ELL is suspected to have more unidentified functions. Elongin is a heterotrimeric protein complex that stimulates the overall rate of elongation. In addition, Elongin may act as an E3 Ubiquitin

ligase. Ubiquitylation of RNA Pol II occurs rapidly after genotoxic assault by UV light or chemicals, and results in degradation by proteasome. The FACT complex appears to promote elongation by facilitating passage of polymerase through chromatin. All these factors contribute to the formation of a processive elongation complex centered around the RNA Pol II complex positioned on the DNA:RNA hybrid. This enables the RNA Pol II elongation complex to function as a platform that coordinates mRNA processing and export (Reviewed by Shilatifard et al., 2003).

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	214638_s_at	204093_at
203565_s_at	201803_at	212955_s_at	202355_s_at	202176_at	202451_at
213468_at	205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at
206967_at	214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at
203664_s_at	202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at
202823_at	213604_at	204645_at	216241_s_at	202354_s_at	203112_s_at
211297_s_at	200085_s_at	201483_s_at	203577_at	212782_x_at	204096_s_at

Authors

Conaway, JW, Conaway, RC, 2003-09-11

Editors

Schmidt, Esther

References

"The RNA polymerase II elongation complex.",Annu Rev Biochem,72,2003,693-715.

2.45. RNA Polymerase II Transcription Elongation (R-HSA-75955)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,The mechanisms governing the process of elongation during eukaryotic mRNA synthesis are being unraveled by recent studies. These studies have led to the expected discovery of a diverse collection of transcription factors that directly regulate the activities of RNA Polymerase II and unexpected discovery of roles for many elongation factors in other basic processes like DNA repair, recombination, etc. The transcription machinery and structural features of the major RNA polymerases are conserved across species. The genes active during elongation fall under different classes like, housekeeping, cell-cycle regulated, development and differentiation specific genes etc. The list of genes involved in elongation has been growing in recent times, and include: -TFIIS,DSIF, NELF, P-Tefb etc. that are involved in drug induced or sequence-

dependent arrest - TFIIF, ELL, elongin, elongator etc. that are involved in increasing the catalytic rate of elongation by altering the Km and/or the Vmax of Pol II -FACT, Paf1 and other factors that are involved chromatin modification - DNA repair proteins, RNA processing and export factors, the 19S proteasome and a host of other factors like Spt5-Spt5, Paf1, and NELF complexes, FCP1P etc. (Arndt and Kane, 2003). Elongation also represents processive phase of transcription in which the activities of several mRNA processing factors are coupled to transcription through their binding to RNA polymerase (Pol II). One of the key events that enables this interaction is the differential phosphorylation of Pol II CTD. Phosphorylation pattern of CTD changes during transcription, most significantly at the beginning and during elongation process. TFIIH-dependent Ser5 phosphorylation is observed primarily at promoter regions while P-Tefb mediated Ser2 phosphorylation is seen mainly in the coding regions, during elongation. Experimental evidence suggests a dynamic association of RNA processing factors with differently modified forms of the polymerase during the transcription cycle. (Komarnitsky et al., 2000). [Komarnitsky et al 2000, Arndt & Kane 2003, Shilatifard et al 2003]

List of identifiers was found at this pathway

209595_at	202356_s_at	209302_at	204095_s_at	213887_s_at	200956_s_at
217420_s_at	214144_at	209520_s_at	201484_at	222104_x_at	221540_x_at
34225_at	209519_at	209219_at	202634_at	214638_s_at	204093_at
203565_s_at	201803_at	212955_s_at	202355_s_at	202176_at	202451_at
213468_at	205035_at	202635_s_at	203198_at	201521_s_at	202824_s_at
206967_at	214263_x_at	202819_s_at	208996_s_at	202757_at	201480_s_at
203664_s_at	202818_s_at	202453_s_at	201517_at	200957_s_at	217854_s_at
202823_at	213604_at	204645_at	216241_s_at	202354_s_at	203112_s_at
211297_s_at	200085_s_at	201483_s_at	203577_at	212782_x_at	204096_s_at

Authors

Conaway, JW, Conaway, RC, 2003-09-11

Editors

Schmidt, Esther

References

"The RNA polymerase II elongation complex.",Annu Rev Biochem,72,2003,693-715.

2.46. mRNA Splicing - Minor Pathway (R-HSA-72165)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,The splicing of a subset of pre-mRNA introns occurs by a second pathway, designated the AT-AC or U12-dependent splicing pathway. AT-AC introns have highly conserved, non-canonical splice

sites that are removed by the AT-AC spliceosome, which contains distinct snRNAs (U11, U12, U4atac, U6atac) that are structurally and functionally analogous to the major spliceosome. U5 snRNA as well as many of the protein factors appear to be conserved between the two spliceosomes.

List of identifiers was found at this pathway

213649_at	206108_s_at	200754_x_at	209595_at	202356_s_at	209302_at
213887_s_at	217420_s_at	221263_s_at	214144_at	209520_s_at	200687_s_at
208863_s_at	209519_at	202634_at	201077_s_at	200619_at	208628_s_at
209044_x_at	201803_at	212955_s_at	202355_s_at	209449_at	201742_x_at
201070_x_at	201076_at	202635_s_at	201521_s_at	215905_s_at	213175_s_at
208821_at	211185_s_at	214263_x_at	201071_x_at	208627_s_at	208996_s_at
211784_s_at	200000_s_at	208804_s_at	203664_s_at	208879_x_at	201129_at
40465_at	201440_at	214141_x_at	201517_at	217854_s_at	200058_s_at
202354_s_at	214305_s_at	214882_s_at	200753_x_at	208880_s_at	212782_x_at

Authors

Hastings, M, 2003-08-22 13:03:08

Editors

Schmidt, Esther

References

"Pre-mRNA splicing: the discovery of a new spliceosome doubles the challenge.",Trends Biochem Sci,22,1997,132-7.

2.47. RNA Polymerase III Transcription (R-HSA-74158)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,RNA polymerase III is one of three types of nuclear RNA polymerases present in eucaryotic cells. About 10% of the total transcription in dividing cells can be attributed to its activity. It synthesizes an eclectic collection of catalytic or structural RNA molecules, some of which are involved in protein synthesis, pre-mRNA splicing, tRNA processing, and the control of RNA polymerase II elongation, whereas some others have still unknown functions. Like other RNA polymerases, RNA polymerase III cannot recognize its target promoters directly. Instead it is recruited to specific promoter sequences through the help of transcription factors. There are three basic types of RNA polymerase III promoters, called types 1, 2, and 3(Geiduschek and Kassavetis, 1992). Although in vivo, RNA polymerase III may be recruited to these promoters as part of a large complex (holo RNA polymerase III) containing the polymerase and its initiation factors (Wang et al., 1997), in vitro the reaction can be divided into several steps. First, the promoter elements are recognized by DNA binding factors, which then

recruit a factor known as TFIIIB. TFIIIB itself then directly contacts RNA polymerase III. In human cells but not in S. cerevisiae, there are at least two versions of TFIIIB. One contains TBP, Bdp1, and Brf1 (Brf1-TFIIIB), and the other TBP, Bdp1, and Brf2 (Brf2-TFIIIB) (Schramm et al., 2000; Teichmann et al., 2000).

List of identifiers was found at this pathway

205658_s_at	219459_at	215926_x_at	210620_s_at	209302_at	221873_at
212429_s_at	201338_x_at	210465_s_at	213887_s_at	202320_at	219198_at
218258_at	205443_at	213203_at	205218_at	206789_s_at	35671_at
204001_at	215677_s_at	217854_s_at	202634_at	204104_at	203754_s_at
215091_s_at	204366_s_at	208361_s_at	209317_at	207515_s_at	215676_at
202635_s_at	218016_s_at	218954_s_at	217876_at	203135_at	218343_s_at
218955_at					

Authors

Hu, P, Hernandez, N, 2005-01-12 15:49:27

Editors

Schmidt, Esther

References

"Identification of an autonomously initiating RNA polymerase III holoenzyme containing a novel factor that is selectively inactivated during protein synthesis inhibition",Genes Dev,11,1997,2371-82.

2.48. RNA Polymerase III Abortive And Retractive Initiation (R-HSA-749476)

Summation

species name:Homo sapiens,compartment name:nucleolus,Abortive initiation, the repetitive formation of short oligonucleotides, is a ubiquitous feature of transcriptional initiation. This Pathway contains events inferred from events in Saccharomyces cerevisiae.

List of identifiers was found at this pathway

205658_s_at	219459_at	215926_x_at	210620_s_at	209302_at	221873_at
212429_s_at	201338_x_at	210465_s_at	213887_s_at	202320_at	219198_at
218258_at	205443_at	213203_at	205218_at	206789_s_at	35671_at
204001_at	215677_s_at	217854_s_at	202634_at	204104_at	203754_s_at
215091_s_at	204366_s_at	208361_s_at	209317_at	207515_s_at	215676_at
202635_s_at	218016_s_at	218954_s_at	217876_at	203135_at	218343_s_at
218955_at					

Authors

Gillespie, ME, 2010-05-18

Editors

Shorser, Solomon, 2016-11-07

2.49. Cdc20:Phospho-APC/C mediated degradation of Cyclin A (R-HSA-174184)

Summation

species name:Homo sapiens,compartment name:cytosol,Cyclin A, functions in mitosis as well as DNA replication and is degraded in the interim by the APC/C to permit normal chromosome segregation, cell division, and the onset of S phase (see Lukas and Bartek, 2004). Cyclin A is initially degraded early in mitosis by APC/C:Cdc20 when the spindle checkpoint is still active and degradation of securin and cyclin B is inhibited.

List of identifiers was found at this pathway

200830_at	208777_s_at	201252_at	201404_x_at	201053_s_at	201198_s_at
201067_at	211746_x_at	201267_s_at	207805_s_at	208799_at	201199_s_at
200786_at	200814_at	200820_at	201068_s_at	203396_at	201052_s_at
202243_s_at	219485_s_at	201316_at	202659_at	201762_s_at	201705_at
203214_x_at	202352_s_at	203418_at	201676_x_at	201317_s_at	203213_at
202753_at	205899_at	214288_s_at	210460_s_at	202244_at	213226_at
201274_at	200876_s_at	202353_s_at	201400_at	201532_at	209040_s_at
200882_s_at	211609_x_at	212296_at	201114_x_at	201232_s_at	209334_s_at
200039_s_at	210559_s_at	210759_s_at	204279_at	216088_s_at	203447_at
208827_at	201233_at	201388_at			

Authors

Matthews, L, 2006-02-17 00:41:48

Editors

Weiser, Joel, 2017-09-13

Reviewers

Peters, JM, 2006-03-27 22:55:09

References

"Anaphase-promoting complex/cyclosome-dependent proteolysis of human cyclin A starts at the beginning of mitosis and is not subject to the spindle assembly checkpoint",J Cell Biol,153,2001,137-48.

2.50. Transcription-Coupled Nucleotide Excision Repair (TC-NER) (R-HSA-6781827)

Summation

species name:Homo sapiens,compartment name:nucleoplasm,DNA damage in transcribed strands of active genes is repaired through a specialized nucleotide excision repair (NER) pathway known as transcription-coupled nucleotide excision repair (TC-NER). TC-NER impairment is the underlying cause of a severe hereditary disorder Cockayne syndrome, an autosomal recessive disease characterized by hypersensitivity to UV light.TC-NER is triggered by helix distorting lesions that block the progression of elongating RNA polymerase II (RNA Pol II). Stalled RNA Pol II complex triggers the recruitment of ERCC6. ERCC6, commonly known as CSB (Cockayne syndrome protein B) recruits ERCC8, commonly known as CSA (Cockayne syndrome protein A). ERCC8 has 7 WD repeat motifs and is part of the ubiquitin ligase complex that also includes DDB1, CUL4A or CUL4B and RBX1. The ERCC8 ubiquitin ligase complex is one of the key regulators of TC-NER that probably exerts its role by ubiquitinating one or more factors involved in this repair process, including the RNA Pol II complex and ERCC6.In addition to RNA Pol II, ERCC6 and the ERCC8 complex, the transcription elongation factor TFIIH, which is also involved in global genome nucleotide excision repair (GG-NER), is recruited to sites of TC-NER. The TC-NER pre-incision complex also includes XPA, XAB2 complex, TCEA1 (TFIIS), HMGN1, UVSSA in complex with USP7, and EP300 (p300). XPA probably contributes to the assembly and stability of the pre-incision complex, similar to its role in GG-NER. The XAB2 complex is involved in pre-mRNA splicing and may modulate the structure of the nascent mRNA hybrid with template DNA through its RNA-DNA helicase activity, allowing proper processing of DNA damage. TCEA1 may be involved in RNA Pol II backtracking, which allows repair proteins to gain access to the damage site. It also facilitates trimming of the 3' end of protruding nascent mRNA from the stalled RNA Pol II, enabling recovery of RNA synthesis after repair.Deubiquitinating activity of the UVSSA:USP7 complex is needed for ERCC6 stability at repair sites. Non-histone nucleosomal binding protein HMGN1 and histone acetyltransferase p300 (EP300) remodel the chromatin around the damaged site, thus facilitating repair.Dual incision of the lesion-containing oligonucleotide from the affected DNA strand is performed by two DNA endonucleases, the ERCC1:ERCC4 (ERCC1:XPF) complex and ERCC5 (XPG), which also participate in GG-NER. DNA polymerases delta, epsilon or kappa fill in the single stranded gap after dual incision and the remaining single strand nick is sealed by DNA ligases LIG1 or LIG3 (the latter in complex with XRCC1), similar to GG-NER. After the repair of DNA damage is complete, RNA Pol II resumes RNA synthesis.For past and recent reviews, see Mellon et al. 1987, Svejstrup 2002, Hanawalt and Spivak 2008, Vermeulen and Fousteri 2013 and Marteijn et al. 2014.

List of identifiers was found at this pathway

209302_at 218110_at 204095_s_at 205672_at 213887_s_at 207347_at

202996_at	217420_s_at	202726_at	214144_at	201756_at	203209_at
203719_at	201529_s_at	222104_x_at	205162_at	221540_x_at	203696_s_at
202634_at	201115_at	204093_at	203565_s_at	201528_at	201803_at
212955_s_at	210158_at	202176_at	202451_at	213468_at	202635_s_at
209085_x_at	214263_x_at	204023_at	204128_s_at	201202_at	208996_s_at
204123_at	203664_s_at	202453_s_at	208021_s_at	216026_s_at	217854_s_at
202414_at	203720_s_at	1053_at	207348_s_at	216241_s_at	204127_at
211297_s_at	209507_at	208619_at	203210_s_at	203422_at	203577_at
212782_x_at	205909_at	212836_at	204096_s_at	203655_at	

Authors

Orlic-Milacic, Marija, 2015-06-02

Editors

Weiser, Joel, 2017-09-13

Reviewers

Fousteri, Maria, 2015-08-03

References

"Understanding nucleotide excision repair and its roles in cancer and ageing",Nat. Rev. Mol. Cell Biol.,15,2014,465-81.

3. Identifiers was found.

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201115_at	P49005	UNIPROT	8.232027	8.210654	8.08945	8.298867	7.459761
201107_s_at	P07996	UNIPROT	5.180806	5.673723	5.232664	5.465181	6.658353
201436_at	P06730	UNIPROT	5.885482	4.107367	5.024518	4.727947	4.252887
201356_at	Q15459	UNIPROT	8.833263	8.294073	8.254484	8.656633	8.222078
200074_s_at	P50914	UNIPROT	11.582639	11.400419	11.534432	11.434419	11.186178
214638_s_at	O60583	UNIPROT	4.768691	4.60683	4.325776	4.473375	3.853383
200821_at	P13473	UNIPROT	7.054912	5.04263	5.275529	5.752721	4.653767
209519_at	Q09161	UNIPROT	4.726965	4.129708	4.748249	4.556653	4.378266
216061_x_at	P01127	UNIPROT	6.516075	7.210537	6.924362	6.972935	7.332161
215794_x_at	P49448, P00367	UNIPROT	8.498316	7.896182	8.071176	8.010732	7.717281
203893_at	Q9Y3D8	UNIPROT	8.109936	6.834478	7.326926	7.224029	6.851849
201068_s_at	P35998	UNIPROT	9.939707	9.429454	9.628591	9.536729	9.228681
205371_s_at	P11182	UNIPROT	4.685787	3.961866	4.075343	3.966446	4.053376
201404_x_at	P49721	UNIPROT	9.075015	9.310893	9.230084	9.72203	9.095859
204625_s_at	P05106	UNIPROT	5.393751	5.526663	5.051307	5.538555	5.690278
213887_s_at	P19388	UNIPROT	9.342544	8.720863	8.955754	9.128401	8.068945

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
215722_s_at	P09661	UNIPROT	7.954923	8.149234	8.538919	8.12417	7.785029
208756_at	Q13347	UNIPROT	10.317266	10.302681	10.396182	10.296219	9.600715
208985_s_at	O75822	UNIPROT	8.397658	7.123286	7.341017	7.577766	6.464881
217356_s_at	P00558	UNIPROT	10.872913	10.02524	10.118873	10.112076	9.690333
200822_x_at	P60174	UNIPROT	10.975751	10.8606	10.939419	11.094816	10.663512
208911_s_at	P11177	UNIPROT	7.354576	6.838503	7.199388	6.581537	6.615104
201322_at	P06576	UNIPROT	11.079875	11.223186	11.235967	11.318824	11.089602
212141_at	P33991	UNIPROT	9.174281	8.639639	8.804727	8.851238	8.499882
204279_at	P28065	UNIPROT	6.134979	5.953707	6.109055	5.891603	6.261384
32836_at	Q99943	UNIPROT	7.853008	8.29184	8.112662	8.156177	7.941169
201035_s_at	Q16836	UNIPROT	8.463468	8.212575	8.160293	7.978711	8.235969
202715_at	P27708	UNIPROT	8.243068	8.126959	8.191898	8.454153	8.105351
214882_s_at	Q01130	UNIPROT	10.348395	9.831891	10.151951	10.319372	9.559298
208628_s_at	P67809	UNIPROT	12.111029	11.949758	12.027657	12.072203	11.848449
200937_s_at	P46777	UNIPROT	11.935951	11.87734	12.027694	11.959872	11.768667
204370_at	Q92989	UNIPROT	8.383291	7.525273	7.871981	7.27355	6.865572
201033_x_at	P05388	UNIPROT	13.505858	13.186618	13.209172	13.244149	13.111189
201221_s_at	P08621	UNIPROT	8.758148	8.609464	8.859495	9.179463	8.446689
203709_at	P15735	UNIPROT	6.259908	6.817279	6.545761	6.805621	6.499442
201052_s_at	Q92530	UNIPROT	8.616374	8.138566	8.253929	8.079704	7.903125
218343_s_at	Q9Y5Q9	UNIPROT	8.122915	7.405347	7.48412	7.447709	6.849033
200959_at	P35637	UNIPROT	8.907104	9.061049	9.319505	9.337607	9.047713
211832_s_at	Q00987	UNIPROT	5.475743	5.134667	5.671156	5.465363	5.035017
209980_s_at	P34896	UNIPROT	7.361441	6.99336	7.066006	6.952676	6.896315
203711_s_at	Q6NVY1	UNIPROT	4.246703	4.287129	4.559201	4.327321	4.137381
204714_s_at	P12259	UNIPROT	4.632615	5.311286	4.813604	5.061755	5.368729
203664_s_at	O15514	UNIPROT	7.926006	7.329452	7.510837	7.454437	6.362611
217202_s_at	P15104	UNIPROT	7.506955	6.645068	6.93934	7.376651	7.010747
202659_at	P40306	UNIPROT	7.117909	7.160999	7.294334	7.127833	6.905619
201770_at	P09012	UNIPROT	9.27723	8.773639	9.147847	9.189717	8.877075
202934_at	P52789	UNIPROT	8.307381	7.809875	8.242842	8.24329	8.171017
206952_at	P35575	UNIPROT	3.342237	3.40655	3.353526	3.374202	3.364441
221481_x_at	Q14103-4, Q14103-3	UNIPROT	10.980363	10.750789	10.744128	10.632455	10.282803
203686_at	P29372	UNIPROT	7.118125	7.656013	7.623158	7.578899	6.973116
201023_at	Q15545	UNIPROT	8.617317	6.655237	7.417613	7.261889	5.710423
207957_s_at	P05771	UNIPROT	3.837005	3.913671	4.373994	4.425853	4.473689
214690_at	Q53T94	UNIPROT	3.720965	3.51011	3.731884	3.381855	3.694823
216733_s_at	P50440	UNIPROT	5.552129	5.977578	5.672371	5.928405	5.05773

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
200685_at	Q05519	UNIPROT	5.510457	4.320441	4.261375	4.357433	4.148182
204208_at	O60942	UNIPROT	5.89621	5.337285	5.880364	5.54931	4.65719
200088_x_at	P30050	UNIPROT	12.654908	12.612557	12.66021	12.704733	12.57435
203710_at	Q14643	UNIPROT	3.545576	3.516491	3.155898	3.009646	4.185223
201252_at	P43686	UNIPROT	8.43982	7.709285	8.106951	8.401384	7.856611
211945_s_at	P05556	UNIPROT	11.262488	11.286827	11.215258	11.197591	11.122375
217445_s_at	P22102	UNIPROT	5.704351	4.542358	4.9577	4.742838	4.038639
202854_at	P00492	UNIPROT	9.823033	8.851771	8.934524	9.138439	8.319868
210451_at	P30613-2, P30613-1	UNIPROT	5.341552	5.172558	5.579121	5.086045	5.613642
206643_at	P42357	UNIPROT	4.702003	5.138468	4.908531	5.003443	5.048431
217918_at	Q9NP97	UNIPROT	9.895363	9.068834	9.283001	9.240177	8.433879
202627_s_at	P05121	UNIPROT	11.455571	11.201371	11.324769	11.262761	11.002711
209155_s_at	P49902	UNIPROT	7.223426	6.258895	5.626623	5.897686	5.052545
205395_s_at	P49959	UNIPROT	6.42048	5.850477	5.580633	6.004701	4.490053
209095_at	P09622	UNIPROT	10.094016	9.026415	9.212899	9.240207	8.649989
200716_x_at	P40429	UNIPROT	13.077506	12.83886	12.929306	12.996513	12.939079
201077_s_at	P55769	UNIPROT	10.638937	10.408836	10.381274	10.546793	10.337028
202257_s_at	O95400	UNIPROT	8.290225	7.619197	8.095162	8.010769	8.542187
202312_s_at	P02452	UNIPROT	6.064498	7.450878	7.347675	7.005764	7.6474
211275_s_at	P46976	UNIPROT	9.147977	7.735213	7.896859	8.033348	7.057869
205531_s_at	Q9UI32	UNIPROT	6.014026	6.016891	6.097361	6.217953	5.511181
208880_s_at	O94906	UNIPROT	8.195983	7.65311	7.85551	8.115185	7.928186
203937_s_at	Q15572	UNIPROT	6.376028	6.42542	6.409026	6.17129	6.074193
217848_s_at	Q15181	UNIPROT	11.078902	10.764453	10.674869	10.74547	10.649324
210049_at	P01008	UNIPROT	4.923361	5.29707	5.868614	5.231572	5.861619
34225_at	Q9H3P2	UNIPROT	7.344332	6.418287	6.935718	6.78315	6.804499
216241_s_at	P23193	UNIPROT	9.785661	9.511613	9.62928	9.574715	9.175653
218388_at	O95336	UNIPROT	6.947627	6.667551	6.73064	6.964724	6.759136
219723_x_at	Q9NRZ7	UNIPROT	6.772315	7.022116	6.748953	6.590664	6.519763
213604_at	Q14241	UNIPROT	6.785101	6.637768	6.629408	6.651522	6.447385
200697_at	P19367	UNIPROT	9.502978	9.360075	9.331225	9.173588	8.985547
203210_s_at	P40937	UNIPROT	7.727114	6.536429	6.707802	6.665042	6.463428
202144_s_at	P30566	UNIPROT	9.375675	9.0632	9.266825	9.241006	8.367754
203447_at	Q16401	UNIPROT	8.796751	8.039612	8.352616	8.323482	7.95493
203722_at	P30038	UNIPROT	6.008421	6.071122	5.949808	6.374895	6.157718
203041_s_at	P13473	UNIPROT	6.892107	6.223601	6.087536	5.705611	5.712987
212107_s_at	Q08211	UNIPROT	9.046327	7.713868	8.364747	8.135504	7.54493
201266_at	Q16881	UNIPROT	10.215512	9.660396	10.06439	10.05675	9.658605

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
212568_s_at	P10515	UNIPROT	7.605471	6.005372	5.668046	6.276104	5.294009
205047_s_at	P08243	UNIPROT	8.563882	8.012963	8.379096	8.153395	6.679307
209992_at	O60825	UNIPROT	5.09965	4.882212	4.743763	4.975068	5.908542
204646_at	Q12882	UNIPROT	3.151419	3.641094	3.164282	3.270587	3.404965
216855_s_at	Q00839	UNIPROT	7.497987	7.612575	7.799421	7.855432	8.104222
202705_at	O95067	UNIPROT	9.097078	8.315996	8.070457	8.652313	7.438784
209979_at	P78563	UNIPROT	6.40283	8.601689	8.229956	8.305564	7.608929
206049_at	P16109	UNIPROT	6.689154	6.676135	6.41341	6.346663	6.483092
213203_at	O75971	UNIPROT	8.358851	7.46725	7.545253	7.60247	6.566269
210050_at	P60174	UNIPROT	5.460801	4.497298	4.807226	4.770778	4.965919
202256_at	O95400	UNIPROT	7.517219	7.857804	7.990587	7.865398	7.599078
209825_s_at	Q9BZX2	UNIPROT	9.374313	8.808607	9.288894	9.118242	8.674422
201114_x_at	O14818	UNIPROT	10.914324	10.901967	10.951559	10.849431	10.361496
216088_s_at	O14818	UNIPROT	8.00631	7.586446	7.864344	7.933963	6.899765
205354_at	Q14353	UNIPROT	5.131091	6.040529	5.597904	5.349449	6.405065
203720_s_at	P07992	UNIPROT	9.607294	9.308561	9.602596	9.451333	9.096316
202354_s_at	P35269	UNIPROT	7.52723	7.555383	7.369947	7.09256	7.701058
202497_x_at	P11169	UNIPROT	6.843252	6.958651	6.510727	6.785135	6.789234
202244_at	P28070	UNIPROT	10.87342	11.03975	10.54977	10.53855	10.193449
203380_x_at	Q13243	UNIPROT	8.832751	8.245759	8.970719	8.621357	7.769841
212042_x_at	P18124	UNIPROT	12.11302	11.958705	12.175557	12.174234	11.945886
201157_s_at	P30419	UNIPROT	8.797826	7.892052	8.048127	7.967387	7.53218
210005_at	P22102	UNIPROT	6.344953	4.406274	5.172989	4.371428	3.542153
202680_at	P29084	UNIPROT	7.78858	6.798879	7.407716	7.400299	7.287634
202168_at	Q16594	UNIPROT	9.941624	9.760528	9.7982	9.731269	9.023104
202338_at	P04183	UNIPROT	7.607291	7.205465	7.337182	7.309894	7.35179
202613_at	P17812	UNIPROT	8.821886	7.96565	8.063149	8.204473	7.885737
213468_at	P18074	UNIPROT	5.848321	6.651578	6.513665	6.191602	6.62801
208627_s_at	P67809	UNIPROT	11.644908	11.853409	11.92486	11.876802	11.69657
207643_s_at	P19438	UNIPROT	7.3513	7.167525	7.257143	7.39854	8.095564
201053_s_at	Q92530	UNIPROT	6.725302	5.745743	5.520241	5.72619	4.943098
207820_at	P07327	UNIPROT	4.825279	4.822704	5.111584	4.956162	6.016558
206254_at	P01133	UNIPROT	3.932636	4.190748	3.995579	4.407237	4.935835
204441_s_at	Q14181	UNIPROT	7.276193	6.823098	6.825306	6.86568	6.670881
210976_s_at	P08237	UNIPROT	9.613039	9.4799	9.374153	9.57079	9.214171
200823_x_at	P47914	UNIPROT	12.221147	12.093231	12.265398	12.409313	12.162762
214621_at	P54840	UNIPROT	3.875605	3.632189	4.292799	4.02112	3.844069
212464_s_at	P02751	UNIPROT	5.113175	5.341345	5.186969	5.20749	5.034874
200602_at	P05067	UNIPROT	7.430367	5.291534	5.861905	5.942676	4.427947

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
209147_s_at	O14494	UNIPROT	6.344947	6.15425	6.003548	6.114625	6.129653
200725_x_at	P27635	UNIPROT	12.466302	12.48559	12.671572	12.498051	12.52439
202635_s_at	P53803	UNIPROT	9.018778	8.129263	8.547847	8.637679	7.448158
218488_at	Q9NR50	UNIPROT	7.978109	7.394002	7.588733	7.378448	6.629051
200032_s_at	P32969	UNIPROT	12.364917	12.360961	12.563211	12.341325	12.278704
209381_x_at	Q15428	UNIPROT	6.758595	6.40288	6.515141	6.584084	6.703866
208870_x_at	P36542	UNIPROT	11.161706	11.078666	10.958279	10.991354	10.824544
204093_at	P51946	UNIPROT	8.851503	8.30398	8.295731	8.471958	7.328497
207076_s_at	P00966	UNIPROT	7.072836	6.759944	6.636365	6.488091	6.532834
209941_at	Q13546	UNIPROT	6.947296	6.2596	6.193578	6.625583	6.75619
217388_s_at	Q16719	UNIPROT	3.763099	3.890286	4.3003	3.911274	4.487603
215482_s_at	Q9UI10	UNIPROT	8.452695	8.285966	8.49091	8.583497	8.402547
208442_s_at	Q13315	UNIPROT	5.331079	5.163561	4.932388	5.573356	5.080312
205936_s_at	P52790	UNIPROT	6.500498	6.749791	6.866175	6.526163	7.675702
202072_at	P14866	UNIPROT	10.032387	10.069227	10.103996	10.375575	9.871934
201571_s_at	P32321	UNIPROT	8.725365	8.400617	8.433962	8.534662	8.126529
203032_s_at	P07954	UNIPROT	7.344317	5.742839	5.964155	5.575663	5.948087
214170_x_at	P07954	UNIPROT	8.790676	9.062882	8.805791	8.753785	8.079031
204413_at	Q12933	UNIPROT	7.008925	7.543209	7.666001	7.878774	7.277459
205412_at	P24752	UNIPROT	9.64054	8.937767	9.160303	9.023864	8.352654
204607_at	P54868	UNIPROT	5.910891	5.703336	5.782805	5.53635	6.554672
200687_s_at	Q15393	UNIPROT	9.175758	8.81534	8.874751	8.892938	8.495948
209549_s_at	Q16854	UNIPROT	9.00409	8.616204	8.556176	8.489211	8.098884
220604_x_at	O95954	UNIPROT	6.347239	6.76883	6.66639	6.517051	7.768266
204286_s_at	Q13794	UNIPROT	6.678493	5.005695	5.450604	5.364415	4.280939
210405_x_at	O14763	UNIPROT	8.236467	8.24071	8.494726	8.263164	7.846539
206494_s_at	P08514	UNIPROT	4.633194	4.851965	5.061173	4.760574	4.962053
208369_s_at	Q92947	UNIPROT	7.108915	6.89856	7.013949	7.088748	7.814421
201388_at	O43242	UNIPROT	7.873075	7.718912	7.681954	7.857592	7.24965
201129_at	Q16629	UNIPROT	8.126758	6.079218	6.150753	6.29861	4.701116
204957_at	O43913	UNIPROT	9.020243	7.92596	8.388471	8.464888	7.116125
205386_s_at	Q00987	UNIPROT	4.985731	4.656938	5.299127	4.495009	3.911806
207560_at	O00337	UNIPROT	6.600224	6.970477	6.358264	6.37375	7.827693
205167_s_at	P30307	UNIPROT	5.686665	5.631826	5.696728	5.679606	5.69397
210460_s_at	P55036	UNIPROT	9.459872	9.218503	9.384495	9.43944	8.837124
200039_s_at	P49721	UNIPROT	10.485458	10.341033	10.429499	10.380328	9.810715
203083_at	P35442	UNIPROT	5.78221	5.927142	5.971972	5.739798	5.805244
201199_s_at	Q99460	UNIPROT	9.409616	9.364183	8.99937	9.399276	9.07054
205023_at	Q06609	UNIPROT	4.690044	4.550316	4.723578	4.720451	4.714122

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
202862_at	P16930	UNIPROT	7.211523	6.737684	6.73564	6.79127	7.225804
208699_x_at	P29401	UNIPROT	8.978298	8.937993	8.879759	9.394698	8.905826
201037_at	Q01813	UNIPROT	8.623412	8.596825	8.295017	8.934627	7.812222
203696_s_at	P35250	UNIPROT	8.547119	7.300415	7.534715	7.660209	6.864239
201142_at	P05198	UNIPROT	8.800846	8.416252	8.683638	8.511	8.176097
211501_s_at	P55884	UNIPROT	8.679863	8.426912	8.663047	8.835364	8.162642
200953_s_at	P30279	UNIPROT	9.523925	8.46348	9.006006	9.314747	8.555541
213223_at	P46779	UNIPROT	7.630574	8.535647	8.132824	8.290381	7.720404
212173_at	P54819	UNIPROT	7.28473	7.401494	7.29265	7.503228	6.893163
210946_at	O14494	UNIPROT	5.414845	4.733848	4.863274	4.886129	4.190948
219485_s_at	O75832	UNIPROT	9.462085	7.871878	8.128032	8.296015	7.821001
204771_s_at	Q15361	UNIPROT	7.120205	6.527844	7.245445	7.156976	6.767537
202004_x_at	Q99643	UNIPROT	8.941901	8.479664	8.664167	8.466234	8.029975
202649_x_at	P39019	UNIPROT	12.121111	11.968592	12.232201	12.210492	12.037908
210949_s_at	Q99613	UNIPROT	10.070591	9.7114	9.828534	10.138348	9.381553
204713_s_at	P12259	UNIPROT	6.648779	6.802733	6.607588	6.348817	7.218898
201268_at	P22392	UNIPROT	11.164456	11.408852	11.531263	11.547141	11.136373
208804_s_at	Q13247	UNIPROT	9.259162	8.725425	9.130365	9.252344	8.763625
217370_x_at	P35637	UNIPROT	9.360926	9.098931	9.04487	9.086474	8.769208
201249_at	P11166	UNIPROT	4.115727	3.517198	3.692821	3.769834	4.259397
216944_s_at	Q14643	UNIPROT	4.587939	4.755255	4.507737	4.596219	4.598148
213792_s_at	P06213	UNIPROT	7.368781	6.860708	5.903362	6.88101	5.703061
201222_s_at	P54727	UNIPROT	10.256486	9.292579	9.514869	9.521988	8.571337
205760_s_at	O15527	UNIPROT	5.303468	5.025341	4.549451	4.434404	4.767737
208758_at	P31939	UNIPROT	9.348958	8.937616	9.207884	9.134518	8.80016
205035_at	Q9Y5B0	UNIPROT	6.690644	6.875625	6.597337	6.990438	6.854226
208620_at	Q15365	UNIPROT	9.387767	9.56912	9.793283	9.896371	9.091434
208726_s_at	P20042	UNIPROT	10.100708	10.166029	10.084702	10.205448	9.741303
201036_s_at	Q16836	UNIPROT	7.373863	6.124456	6.089949	6.28854	5.308414
205370_x_at	P11182	UNIPROT	8.146852	8.753856	9.007804	8.552671	8.192487
200979_at	P08559	UNIPROT	7.098147	6.368782	6.114374	6.221928	5.507871
201521_s_at	P52298	UNIPROT	7.498877	7.159427	7.19857	7.51398	7.275617
204267_x_at	Q99640	UNIPROT	8.027213	8.447297	8.301235	8.377072	8.328754
203743_s_at	Q13569	UNIPROT	7.938208	6.501125	6.587096	7.017735	5.713542
202772_at	P35914	UNIPROT	7.558855	7.671339	7.764866	7.557107	8.256267
210653_s_at	P21953	UNIPROT	5.657662	4.837149	5.545559	5.324213	5.071657
215687_x_at	Q9NQ66	UNIPROT	6.495826	6.316988	6.279344	6.143925	7.018293
201108_s_at	P07996	UNIPROT	6.156082	6.185501	5.862543	6.235976	7.23841
218350_s_at	O75496	UNIPROT	9.100134	8.01818	7.924716	7.830745	7.247099

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
212015_x_at	P26599	UNIPROT	10.094613	10.332173	10.228181	10.555657	10.107606
215535_s_at	Q99943	UNIPROT	7.384332	7.449186	7.619567	7.442804	7.998246
37462_i_at	Q15428	UNIPROT	7.40764	7.185557	7.149703	7.31252	6.796703
216238_s_at	P02675	UNIPROT	3.482009	3.581715	3.982889	3.598574	4.281574
200793_s_at	Q99798	UNIPROT	7.723288	7.805126	7.58307	7.64947	7.606211
214701_s_at	P02751	UNIPROT	5.443248	5.776376	6.008442	5.852188	7.114338
201762_s_at	Q9UL46	UNIPROT	9.632824	9.505289	9.629675	9.603183	8.937943
210416_s_at	O96017	UNIPROT	7.317426	6.814669	6.737416	6.646127	6.857748
211073_x_at	P39023	UNIPROT	12.557232	12.469286	12.558	12.517233	12.50725
210164_at	P10144	UNIPROT	4.424197	4.463181	4.391632	4.422104	4.822835
208864_s_at	P10599	UNIPROT	11.29272	10.937585	10.979373	10.986559	10.597542
204781_s_at	P25445	UNIPROT	7.815789	7.505361	7.595593	7.307704	6.697382
208619_at	Q16531	UNIPROT	9.065063	9.133022	9.180945	8.974563	8.761157
208264_s_at	O75822	UNIPROT	6.951256	5.484674	5.82091	6.117152	5.237878
211942_x_at	P40429	UNIPROT	12.287868	12.112154	12.342341	12.296528	12.152712
209349_at	Q92878	UNIPROT	4.909649	5.273505	4.906413	4.549298	5.069008
201400_at	P49720	UNIPROT	10.351745	10.298193	10.393332	10.365543	9.974465
201463_s_at	P37837	UNIPROT	9.95509	9.792514	9.850621	9.861714	9.414888
203132_at	P06400	UNIPROT	7.449723	4.764841	5.013694	5.340775	4.265356
217717_s_at	P31946	UNIPROT	9.073717	8.410486	8.027486	8.500538	7.186908
212171_x_at	P15692	UNIPROT	7.988709	8.058714	8.13448	8.067073	8.027138
204366_s_at	Q8WUA4	UNIPROT	8.390821	7.815416	8.050626	7.970667	7.646529
200034_s_at	Q02878	UNIPROT	11.802912	11.6947	11.817369	11.803903	11.527011
206488_s_at	P16671	UNIPROT	5.24003	5.136089	5.193563	5.208133	5.99961
209276_s_at	P35754	UNIPROT	10.473655	10.339207	10.503865	10.432282	10.214992
212360_at	Q01433	UNIPROT	7.609088	7.478603	7.818295	7.823467	7.889689
203401_at	P11908	UNIPROT	8.652361	7.370095	7.434787	7.475844	5.958735
204853_at	Q13416	UNIPROT	6.848527	6.251987	6.069647	6.134979	5.621701
209161_at	O43172	UNIPROT	9.368742	8.786854	8.716708	8.705851	8.336171
205175_s_at	P50053	UNIPROT	5.377439	5.327416	5.364421	5.258714	6.000638
219214_s_at	Q8TCD5	UNIPROT	7.400951	8.05806	7.984144	7.93564	8.117711
208766_s_at	O43390	UNIPROT	10.513713	9.870589	9.897133	10.044595	8.511807
214687_x_at	P04075	UNIPROT	11.501809	11.574004	11.688682	11.698365	11.60605
202528_at	Q14376	UNIPROT	6.893757	6.828359	6.687467	7.09256	7.002642
214146_s_at	P02775	UNIPROT	4.004256	4.197829	3.86766	4.039231	4.427947
207537_at	P16118	UNIPROT	5.878331	5.575984	5.582319	5.978017	7.162036
206246_at	Q16877	UNIPROT	6.575722	6.996046	6.807769	7.015895	7.410321
211725_s_at	P55957	UNIPROT	8.481123	8.253678	8.41086	8.524197	8.047493
222021_x_at	P31040	UNIPROT	8.685124	8.873604	8.819886	8.609314	8.1194

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201005_at	P21926	UNIPROT	9.674585	8.873136	9.21616	9.04838	8.755448
218440_at	Q96RQ3	UNIPROT	7.464374	6.913139	6.659825	7.045359	6.063922
205770_at	P00390-2	UNIPROT	8.26071	7.799667	7.890418	7.870364	7.260641
207200_at	P00480	UNIPROT	4.9073	5.128377	4.605845	4.603313	5.375378
205369_x_at	P11182	UNIPROT	6.865707	6.282086	6.287923	6.840937	6.366188
218790_s_at	Q9NVH6	UNIPROT	5.282381	4.914926	4.752942	4.904542	5.389613
202628_s_at	P05121	UNIPROT	9.176102	9.031066	8.942642	9.052064	7.57959
210027_s_at	P27695	UNIPROT	10.20495	9.743851	10.100556	9.919319	9.528273
201317_s_at	P25787	UNIPROT	10.806671	10.261768	10.407493	10.528903	9.852701
201528_at	P27694	UNIPROT	8.847736	7.235774	7.710525	7.696413	6.629817
210512_s_at	P15692	UNIPROT	7.255919	5.45716	5.774787	5.612227	3.996188
205545_x_at	O75937	UNIPROT	9.173524	8.364248	8.779306	8.831359	8.678615
213366_x_at	P36542	UNIPROT	10.708519	10.611473	10.533217	10.703046	10.354664
215719_x_at	P25445	UNIPROT	7.684107	6.893612	7.023008	7.082818	5.226345
201132_at	P55795	UNIPROT	7.726437	5.400537	6.046715	5.895525	4.322797
211323_s_at	Q14643	UNIPROT	5.484642	5.535735	5.134733	5.29292	5.938224
210620_s_at	Q8WUA4	UNIPROT	7.029693	6.66499	6.725725	7.148111	6.984097
202960_s_at	P22033	UNIPROT	7.237302	5.673846	5.929421	6.422646	5.049405
208630_at	P40939	UNIPROT	7.561699	6.885593	7.162776	7.231326	7.359515
201665_x_at	P08708	UNIPROT	12.582804	12.621435	12.651908	12.690933	12.589411
209977_at	P00747	UNIPROT	5.492484	5.7644	5.767257	5.88637	6.128392
208712_at	P24385	UNIPROT	7.460048	6.95639	6.468774	7.167056	6.711667
209040_s_at	P28062	UNIPROT	7.021834	6.774221	6.990535	7.074656	7.157937
211298_s_at	P02768	UNIPROT	3.303451	3.45233	3.691399	3.33785	4.395716
200089_s_at	P36578	UNIPROT	11.457794	11.294325	11.514968	11.546102	11.378893
214390_s_at	P54687	UNIPROT	5.681881	5.749799	5.453406	5.356753	5.820251
211833_s_at	Q07812	UNIPROT	7.69681	6.589259	6.801535	6.968317	5.79336
208967_s_at	P54819	UNIPROT	9.994638	9.621829	9.959878	9.778956	9.650046
202176_at	P19447	UNIPROT	8.181716	7.487184	7.820296	7.807527	7.369596
204095_s_at	P55199	UNIPROT	6.538486	6.812309	6.904181	6.902691	7.240721
203565_s_at	P51948	UNIPROT	7.186042	6.807766	7.028751	7.294475	6.380913
217512_at	P01042	UNIPROT	5.075392	5.245279	5.667416	5.317424	4.931361
215195_at	P17252	UNIPROT	6.6679	6.011344	6.102083	6.366461	5.838142
211552_s_at	P30038	UNIPROT	6.549338	6.893129	6.684487	7.376413	6.731262
1729_at	Q15628	UNIPROT	6.869688	6.99104	7.129922	7.112222	7.04721
211065_x_at	P17858	UNIPROT	7.679539	8.525623	8.304121	8.385044	8.368309
203302_at	P27707	UNIPROT	6.747611	4.999936	4.626119	4.548962	4.152414
203967_at	Q99741	UNIPROT	7.885693	6.593298	6.64586	6.897122	5.504822
208711_s_at	P24385	UNIPROT	7.403295	6.377462	6.605788	6.618441	6.012241

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201223_s_at	P54727	UNIPROT	9.48575	7.909938	8.443942	8.435371	7.555983
217112_at	P01127	UNIPROT	5.174489	5.666728	5.21185	5.286874	6.357181
212718_at	P51003	UNIPROT	10.214479	9.158308	9.337267	9.247114	8.406187
204374_s_at	P51570	UNIPROT	6.174769	6.373223	6.304897	6.117152	7.229517
207931_s_at	O60825	UNIPROT	6.66869	6.50126	6.810975	6.685719	7.203235
202352_s_at	O00232	UNIPROT	10.285861	9.316087	9.704443	9.783902	8.923676
214144_at	O15514	UNIPROT	6.122003	5.259818	5.924184	5.604524	4.669397
209595_at	P13984	UNIPROT	5.397105	5.261956	4.790947	5.1584	5.357596
213687_s_at	P18077	UNIPROT	11.273194	11.448438	11.299448	11.317584	11.16992
208708_x_at	P55010	UNIPROT	9.348537	8.945469	9.570588	9.286754	8.409988
201592_at	O15372	UNIPROT	11.313424	11.488948	11.517889	11.497127	11.219188
206621_s_at	Q15056	UNIPROT	9.893305	9.797083	9.888183	9.931706	9.311647
211185_s_at	O75533	UNIPROT	8.961719	7.864222	8.422404	8.169775	6.647288
215165_x_at	P11172	UNIPROT	8.569437	7.557564	7.920011	7.922619	7.477554
208790_s_at	Q6NZI2	UNIPROT	6.09256	5.614302	5.920407	5.762503	6.309923
202447_at	Q16698	UNIPROT	8.484899	7.736798	7.784062	7.605101	6.575379
220651_s_at	Q7L590	UNIPROT	8.907051	7.385299	7.320595	7.552736	7.175499
214308_s_at	Q93099	UNIPROT	5.404062	5.76066	6.214073	5.879507	6.82998
212491_s_at	O75937	UNIPROT	8.374802	7.972696	8.280409	8.452998	8.160535
203050_at	Q12888	UNIPROT	7.427406	7.328425	6.80409	7.231693	6.986773
209439_s_at	P46019	UNIPROT	6.541059	6.530802	6.788681	6.688447	6.112595
204123_at	P49916	UNIPROT	6.659908	6.561828	6.442305	6.334435	6.699428
201357_s_at	Q15459	UNIPROT	7.199224	7.113319	6.985557	7.360195	6.737225
218382_s_at	P26368	UNIPROT	7.298902	7.429889	7.477089	7.519829	7.179311
208361_s_at	P05423	UNIPROT	7.480782	6.996976	7.04598	7.483581	7.613283
206054_at	P01042	UNIPROT	4.788987	5.107515	4.974785	5.27023	6.472222
204285_s_at	Q13794	UNIPROT	8.475683	7.059408	7.940701	7.493988	5.933421
212175_s_at	P54819	UNIPROT	9.536441	8.831417	8.94324	9.065885	8.876733
213738_s_at	P25705	UNIPROT	11.053742	10.526998	10.828698	10.801808	10.314353
216591_s_at	Q99643	UNIPROT	8.258072	7.765007	7.487734	7.719354	7.119686
201338_x_at	Q92664	UNIPROT	10.15536	9.979779	10.052895	10.120224	9.307206
202498_s_at	P11169	UNIPROT	4.347401	4.149803	4.154036	4.207757	4.257193
200072_s_at	P52272	UNIPROT	10.071107	10.114123	10.320903	10.31761	9.747738
209334_s_at	O00233	UNIPROT	5.987997	5.968494	5.774803	5.866875	5.673576
217010_s_at	P30307	UNIPROT	5.034444	4.741847	4.540018	5.033765	6.657465
202320_at	Q12789	UNIPROT	7.350054	7.56165	7.321435	7.670811	7.862608
202022_at	P09972	UNIPROT	6.271117	6.948611	6.753223	6.660172	6.540089
202706_s_at	P11172	UNIPROT	8.540868	7.33331	7.885936	7.997377	7.058111
209520_s_at	Q09161	UNIPROT	8.154591	7.002694	7.074287	7.210908	6.648337

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
204147_s_at	Q14186	UNIPROT	7.521711	7.391674	7.408508	7.743565	7.261836
213374_x_at	Q6NVY1	UNIPROT	5.401092	4.455668	4.309243	4.74094	4.153193
211904_x_at	P43351	UNIPROT	5.292189	5.458427	5.644007	5.905487	6.506999
201786_s_at	P55265	UNIPROT	9.061198	8.797127	8.868662	8.999592	8.525849
212226_s_at	O14495	UNIPROT	5.960559	5.658744	5.687437	5.463578	5.420396
213093_at	P17252	UNIPROT	5.64919	5.312076	5.344154	5.00726	4.862553
201076_at	P55769	UNIPROT	8.79749	8.373825	8.905333	8.763581	8.505765
200012_x_at	P46778	UNIPROT	12.486269	12.402275	12.302666	12.256543	12.282444
207005_s_at	P10415	UNIPROT	5.611983	7.587351	7.138953	7.485126	7.364201
200686_s_at	Q05519	UNIPROT	8.982707	7.440836	8.055333	8.157718	6.349062
203818_s_at	Q12874	UNIPROT	8.54958	8.033498	8.316042	8.186601	7.575435
210858_x_at	Q13315	UNIPROT	6.153002	6.453818	6.331006	6.261942	6.961387
201017_at	P47813	UNIPROT	7.973725	6.758964	6.886201	7.262316	6.422963
203214_x_at	P06493	UNIPROT	9.033995	8.572241	8.964032	8.916804	8.511505
202684_s_at	O43148	UNIPROT	4.979669	3.749527	4.112572	3.87906	3.726616
201705_at	P51665	UNIPROT	8.396815	7.88927	7.635615	7.794326	6.320804
213461_at	O43809	UNIPROT	8.125538	6.52787	6.759577	6.674947	5.61452
221873_at	P52747	UNIPROT	6.019354	5.486834	5.086811	5.487588	4.715508
210678_s_at	O15120	UNIPROT	7.52231	7.949456	7.726666	7.835998	7.845687
200597_at	Q14152	UNIPROT	7.465769	5.859137	6.66313	6.224449	5.668913
212739_s_at	O00746	UNIPROT	7.625961	7.819266	7.827639	8.098628	7.790285
222104_x_at	Q13889	UNIPROT	8.00499	8.251967	7.966593	8.015656	7.741343
211542_x_at	P46783	UNIPROT	12.84896	12.858953	12.905145	12.888101	12.784037
200647_x_at	Q99613	UNIPROT	10.053748	9.764065	9.956249	10.051188	9.581428
214047_s_at	O95243	UNIPROT	7.234496	5.791719	5.778196	6.192812	5.337512
206226_at	P04196	UNIPROT	6.099218	6.018535	5.869326	5.866637	6.162571
209961_s_at	P14210	UNIPROT	7.175712	7.149977	6.82238	7.137033	6.961329
209364_at	Q92934	UNIPROT	7.533012	7.539213	7.553217	7.381323	7.421108
210131_x_at	Q99643	UNIPROT	9.210622	8.895017	8.9084	8.856163	8.353022
213264_at	Q15366	UNIPROT	6.594327	6.697078	6.352563	6.411961	6.476928
221586_s_at	Q15329	UNIPROT	6.76693	5.404609	5.925282	5.719895	5.751909
203084_at	P01137	UNIPROT	5.480604	6.853932	6.539084	6.667682	6.664697
205162_at	Q13216	UNIPROT	6.922287	6.657476	6.962211	6.270303	6.299272
216237_s_at	P33992	UNIPROT	8.563519	7.464169	7.782397	7.859956	7.071394
202356_s_at	P35269	UNIPROT	7.596173	6.977725	7.257154	7.325833	7.268685
202739_s_at	Q93100	UNIPROT	5.577232	5.17355	4.875586	4.925488	4.855194
200650_s_at	P00338	UNIPROT	12.012366	11.778109	11.667695	11.738708	11.483623
201432_at	P04040	UNIPROT	7.899414	6.950476	6.964282	6.764844	6.432673
201612_at	P49189	UNIPROT	8.315994	7.71728	7.249478	7.497609	7.396256

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
202823_at	Q15369	UNIPROT	7.690764	5.507525	6.221522	6.230381	5.360858
210465_s_at	Q92966	UNIPROT	6.489721	4.95214	5.8528	5.503301	5.615598
202675_at	P21912	UNIPROT	8.78782	8.09117	8.22279	8.386766	7.584855
214203_s_at	O43272	UNIPROT	6.161017	6.236594	6.052347	6.129185	6.878442
205943_at	P48775	UNIPROT	4.429929	4.62718	4.421025	4.731733	4.240225
200715_x_at	P40429	UNIPROT	12.37566	12.41865	12.442644	12.442644	12.407518
208777_s_at	O00231	UNIPROT	9.723879	9.32735	9.516296	9.606687	8.831754
211271_x_at	P26599	UNIPROT	10.050824	10.352936	10.301093	10.587585	10.124716
213801_x_at	P08865	UNIPROT	12.794979	12.700611	12.731705	12.718908	12.633003
206535_at	P11168	UNIPROT	3.794709	3.778113	4.411877	3.965457	3.874925
213470_s_at	P31943	UNIPROT	9.21285	9.025642	9.12998	9.060393	7.91362
218955_at	Q9HAW0	UNIPROT	7.924703	7.809412	7.985569	7.781466	8.271733
208021_s_at	P35251	UNIPROT	7.311631	7.167498	7.277554	6.930274	6.600558
212734_x_at	P26373	UNIPROT	12.712156	12.654367	12.874179	12.842048	12.661931
210501_x_at	Q9UBQ5	UNIPROT	10.258742	10.211678	10.351846	10.353109	9.879683
208725_at	P20042	UNIPROT	7.112297	7.582115	7.224818	7.467834	6.897841
200085_s_at	Q15370	UNIPROT	10.652049	10.416173	10.818984	10.760781	10.103269
209317_at	O15160	UNIPROT	8.238942	7.372391	7.520697	7.947984	6.893646
202738_s_at	Q93100	UNIPROT	6.745151	5.927142	5.967026	6.148091	5.901835
200095_x_at	P46783	UNIPROT	13.135348	12.981857	13.017407	13.037759	12.992211
211930_at	P51991	UNIPROT	7.019513	7.057503	7.110478	7.001495	6.533723
201395_at	P52756	UNIPROT	8.566889	8.382968	8.471253	8.466485	7.845982
203112_s_at	Q9H3P2	UNIPROT	7.419477	5.881931	6.377476	6.533169	5.362726
200038_s_at	P18621	UNIPROT	12.392395	12.374603	12.46662	12.454694	12.308414
203351_s_at	O43929	UNIPROT	8.54911	6.945712	7.337732	7.441994	6.065814
202697_at	O43809	UNIPROT	9.339609	8.051338	8.162207	8.239181	7.168658
216457_s_at	Q15459	UNIPROT	8.049105	7.371525	7.187558	7.440712	6.313086
206121_at	P23109	UNIPROT	4.995817	5.01606	5.498325	5.262951	5.381028
208887_at	O75821	UNIPROT	9.668918	9.778308	10.001338	9.940119	9.553855
209561_at	P49746	UNIPROT	5.931315	6.18389	6.052476	6.075952	6.458409
210495_x_at	P02751	UNIPROT	6.134763	6.591862	6.423158	6.240856	5.311251
216574_s_at	Q2QD12, Q96AT9	UNIPROT	6.254626	5.800236	5.408375	5.802413	6.405714
200876_s_at	P20618	UNIPROT	10.308496	9.739537	10.198298	9.860938	9.218792
200024_at	P46782	UNIPROT	12.61513	12.313568	12.422621	12.368137	12.170793
221770_at	Q96AT9	UNIPROT	8.008516	6.867691	6.720192	6.589991	6.250299
205221_at	Q93099	UNIPROT	4.755864	5.516505	5.271433	5.418681	5.978214
202310_s_at	P02452	UNIPROT	4.091237	4.320838	4.595043	4.532559	5.555635
202366_at	P16219	UNIPROT	7.048069	7.621792	7.564083	7.766646	7.609786

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201109_s_at	P07996	UNIPROT	4.397317	4.959122	4.667545	4.939211	4.869395
222088_s_at	P11169	UNIPROT	6.623314	6.514127	6.352777	6.02828	6.397802
201316_at	P25787	UNIPROT	7.634429	6.407741	6.780205	6.418469	6.906591
216316_x_at	P32189, Q14409	UNIPROT	6.070056	6.155633	6.395275	6.139798	6.080585
200724_at	P27635	UNIPROT	5.850982	6.376134	5.981928	5.857011	5.990787
201007_at	P55084	UNIPROT	9.152489	8.438698	8.347019	8.397317	7.723497
203061_s_at	Q14676	UNIPROT	6.671067	6.866646	6.678101	7.164204	7.9983
208743_s_at	P31946	UNIPROT	8.852037	7.674407	7.638164	7.628985	6.557832
201890_at	P31350	UNIPROT	9.809316	8.542762	8.977514	8.343866	8.137845
210418_s_at	O43837	UNIPROT	8.664168	8.316155	8.45544	8.425689	8.244355
221928_at	O00763	UNIPROT	5.512403	6.44831	6.251956	5.645874	7.232181
201639_s_at	Q10570	UNIPROT	7.265788	7.552361	7.663895	7.866392	7.314125
216835_s_at	Q99704	UNIPROT	6.538933	7.57544	7.261061	7.390632	7.214819
203754_s_at	Q92994	UNIPROT	6.653463	7.062928	7.059073	7.359212	7.591612
200002_at	P42766	UNIPROT	12.555275	12.511045	12.564419	12.538642	12.439174
201217_x_at	P39023	UNIPROT	12.450461	12.373907	12.453261	12.496526	12.400524
212581_x_at	P04406	UNIPROT	13.176182	12.919657	12.91757	12.993747	12.975232
212955_s_at	P36954	UNIPROT	8.423475	8.074126	7.994791	8.358433	7.580253
205899_at	P78396	UNIPROT	4.511875	4.452445	4.495732	4.269893	4.659969
221480_at	Q14103-4, Q14103-3	UNIPROT	7.238246	6.199318	6.14332	5.990702	5.658947
212694_s_at	P05166	UNIPROT	9.026461	8.392817	8.329328	8.347111	7.43769
200957_s_at	Q08945	UNIPROT	9.244761	9.177374	9.263119	9.162461	8.597288
203042_at	P13473	UNIPROT	5.78075	4.46864	4.474162	4.774575	4.71945
212716_s_at	Q9UBQ5	UNIPROT	10.043334	9.39229	9.722591	9.859861	8.693368
208642_s_at	P13010	UNIPROT	10.453304	10.025621	10.298246	10.336919	9.682881
212836_at	Q15054	UNIPROT	6.624346	5.660374	6.31374	6.102755	5.611951
208290_s_at	P55010	UNIPROT	8.622186	8.018895	8.555219	8.364915	7.191402
222037_at	P33991	UNIPROT	8.122806	7.071729	7.460267	7.632057	7.300759
206665_s_at	Q07817	UNIPROT	6.614437	6.686179	6.523459	6.747749	6.091543
201233_at	Q9UNM6	UNIPROT	7.647478	7.92123	8.13889	8.331896	7.947984
212429_s_at	Q8WUA4	UNIPROT	7.968555	7.265395	7.080471	7.274762	7.283638
200022_at	Q07020	UNIPROT	12.205038	11.927471	12.064725	12.031422	11.932256
201698_s_at	Q13242	UNIPROT	10.362538	10.187698	10.301427	10.338579	9.578656
200075_s_at	Q16774	UNIPROT	8.734979	8.425099	8.552273	8.624309	8.204209
214953_s_at	P05067	UNIPROT	8.812136	7.781675	8.040289	7.763989	7.120082
211849_s_at	O60942	UNIPROT	5.393612	4.869766	4.713739	5.091801	4.734595
202833_s_at	P01009	UNIPROT	3.674855	3.768297	4.084498	3.911226	4.044408
202683_s_at	O43148	UNIPROT	7.119514	6.992919	6.919301	7.063658	7.486419

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
211784_s_at	Q07955	UNIPROT	10.307773	9.549139	9.971237	9.857541	9.200009
217866_at	Q8N684	UNIPROT	8.061557	7.876958	7.96715	7.811337	8.229807
205612_at	Q13201	UNIPROT	3.061838	3.614756	3.544697	3.429833	3.183561
202464_s_at	Q16875	UNIPROT	7.454342	5.858098	5.893593	5.909685	5.226387
209269_s_at	P43405	UNIPROT	5.169552	5.80741	5.24733	5.600528	5.030162
202535_at	Q13158	UNIPROT	8.070701	7.183623	7.551967	7.758085	6.53697
210337_s_at	P53396	UNIPROT	8.908935	8.679909	8.719424	8.667449	7.910986
204459_at	P33240	UNIPROT	7.710893	7.236336	7.630072	7.523601	7.295016
217398_x_at	P04406	UNIPROT	13.023735	12.722862	12.865571	12.860478	12.798376
203692_s_at	O00716	UNIPROT	7.120515	6.811934	7.252124	7.3237	8.084937
214305_s_at	O75533	UNIPROT	8.607275	7.733483	7.670198	7.605075	7.835153
218954_s_at	Q9HAW0	UNIPROT	5.995095	6.490769	6.299604	6.21836	6.769365
214710_s_at	P14635	UNIPROT	9.448482	8.458941	9.119578	8.854596	8.244563
211719_x_at	P02751	UNIPROT	4.875421	5.028531	5.041701	5.048034	4.566361
200738_s_at	P00558	UNIPROT	10.949746	10.48066	10.526778	10.568761	9.935766
209978_s_at	P00747	UNIPROT	5.45348	5.579412	5.962725	5.446036	6.110775
217854_s_at	P19388	UNIPROT	10.046676	9.397528	9.60889	9.649849	9.185686
200058_s_at	O75643	UNIPROT	9.318615	9.225199	8.837598	9.133667	8.325186
211297_s_at	P50613	UNIPROT	8.125625	7.293516	7.771509	7.747693	6.732869
205241_at	O43819	UNIPROT	7.25403	7.107689	7.120415	7.22781	7.045206
201135_at	P30084	UNIPROT	9.815336	9.757032	9.81032	9.798688	9.456423
209036_s_at	P40926	UNIPROT	9.604384	9.258	9.409991	9.379262	8.931237
209429_x_at	Q9UI10	UNIPROT	8.609091	7.652341	8.083008	8.132242	8.166412
208707_at	P55010	UNIPROT	6.510909	7.142404	6.649498	6.749185	6.93345
201599_at	P04181	UNIPROT	9.400362	7.90137	8.229792	8.412925	7.441435
202107_s_at	P49736	UNIPROT	9.700528	8.932011	9.230084	9.105625	8.643113
200663_at	P08962	UNIPROT	10.607618	10.317579	10.48448	10.274971	9.86335
204695_at	P30304	UNIPROT	8.759437	8.75989	8.781145	8.674273	8.25997
211929_at	P51991	UNIPROT	8.446033	6.700021	6.609526	7.171504	5.861528
208700_s_at	P29401	UNIPROT	8.724008	8.701884	8.689402	9.005941	8.68984
200869_at	Q02543	UNIPROT	11.999598	11.870645	12.05733	11.996391	11.909312
204997_at	P21695	UNIPROT	5.571978	6.852371	5.968569	6.353026	7.186017
209265_s_at	Q86U44	UNIPROT	7.978162	7.397687	7.558413	7.498606	6.735829
212230_at	O14495	UNIPROT	4.942079	4.904737	5.333364	4.873094	5.036179
202961_s_at	P56134	UNIPROT	11.152285	11.190001	11.205906	11.29966	10.688324
203107_x_at	P15880	UNIPROT	13.166493	13.106134	13.155082	13.15247	13.118873
204628_s_at	P05106	UNIPROT	5.853032	6.080739	6.041431	6.14946	6.242987
216711_s_at	P21675	UNIPROT	6.552052	7.533493	6.697768	6.623951	7.152727
208856_x_at	P05388	UNIPROT	13.491422	13.212644	13.181554	13.179993	13.107599

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201956_s_at	O15228	UNIPROT	8.609735	8.160418	7.809345	7.729076	7.311516
205382_s_at	P00746	UNIPROT	6.321736	6.253002	5.652392	6.301634	7.243097
213377_x_at	P25398	UNIPROT	12.595482	12.610855	12.721295	12.682903	12.642606
201014_s_at	P22234	UNIPROT	10.13169	8.892452	9.180611	9.386557	8.69233
200947_s_at	P00367	UNIPROT	9.566049	8.688041	8.788195	8.802043	8.283363
215926_x_at	Q5SXM2	UNIPROT	8.26649	8.861525	8.945173	9.050192	8.489968
221737_at	Q03113	UNIPROT	5.259393	5.610908	5.381783	5.290059	5.646004
212379_at	P22102	UNIPROT	8.599435	8.245275	8.651208	8.251792	8.596888
207312_at	Q16816	UNIPROT	6.243399	6.832383	6.475154	6.380188	7.541056
201577_at	P15531	UNIPROT	11.265289	11.130427	11.31343	11.2048	10.71787
202353_s_at	O00232	UNIPROT	9.176255	7.361629	7.786393	7.891028	6.27238
207163_s_at	P31749	UNIPROT	7.995097	7.639842	7.765718	7.75645	7.553655
213414_s_at	P39019	UNIPROT	12.772151	12.502395	12.542726	12.587339	12.417871
201102_s_at	P17858	UNIPROT	7.220062	8.210014	8.368021	8.254779	8.652242
208821_at	P14678	UNIPROT	10.394731	9.775144	9.882349	10.124919	9.68135
202707_at	P11172	UNIPROT	5.754878	5.69775	5.426729	5.581031	5.480372
205052_at	Q13825	UNIPROT	6.557078	5.038678	5.289704	5.961471	5.230404
209624_s_at	Q9HCC0	UNIPROT	7.622803	7.022742	6.649741	7.102058	7.039585
207573_x_at	O75964	UNIPROT	10.758158	10.776182	10.967993	10.830775	10.582203
203034_s_at	P46776	UNIPROT	12.734181	12.623573	12.67698	12.583326	12.385559
211028_s_at	P50053	UNIPROT	7.476199	7.528243	7.447196	7.455708	7.613673
209449_at	Q9Y333	UNIPROT	8.257252	8.137947	8.246426	8.362954	8.328286
215677_s_at	Q92994	UNIPROT	5.864552	6.416794	6.640709	6.287136	6.493845
201801_s_at	Q99808	UNIPROT	8.544754	7.589714	7.889369	7.981195	7.556952
218830_at	Q9UNX3	UNIPROT	9.449002	8.944682	9.42211	9.088785	8.122362
221540_x_at	Q13888	UNIPROT	7.317451	6.593607	7.267253	7.038621	5.687203
200751_s_at	P07910	UNIPROT	9.802159	9.510632	9.650587	9.583433	7.96041
213321_at	P21953	UNIPROT	6.33819	6.571825	6.23727	6.313736	6.409068
206742_at	O43915	UNIPROT	5.540701	5.771577	4.914318	5.565851	5.491697
201484_at	P63272	UNIPROT	7.427704	7.154908	7.227203	7.283913	7.313101
212270_x_at	P18621	UNIPROT	12.622311	12.5322	12.657224	12.652589	12.546949
201054_at	Q13151	UNIPROT	9.308566	8.11519	8.065289	8.421175	7.691709
205577_at	P11217	UNIPROT	5.805493	6.496425	6.038752	6.410129	6.316035
202687_s_at	P50591	UNIPROT	3.515453	4.282026	3.642569	4.007067	4.445091
219612_s_at	P02679	UNIPROT	4.116468	4.414218	5.002885	3.819053	4.955648
219198_at	Q9UKN8	UNIPROT	8.477142	8.218325	8.39723	7.974463	7.59883
210158_at	Q92889	UNIPROT	6.416092	6.321106	6.270129	6.104147	6.416581
210301_at	P47989	UNIPROT	6.634664	6.901819	7.019495	6.309383	7.713926
201555_at	P25205	UNIPROT	9.074728	8.294017	8.65098	8.836891	8.59408

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
204096_s_at	P55199	UNIPROT	6.729922	7.121799	7.547732	7.43789	7.063284
200016_x_at	P09651	UNIPROT	12.110468	11.913288	11.938524	11.899243	11.458105
208545_x_at	O00268	UNIPROT	4.696188	5.129874	4.814315	4.901035	5.390201
209123_at	P09417	UNIPROT	9.603811	8.569859	8.924158	8.995671	8.379455
201394_s_at	P52756	UNIPROT	7.833167	7.604464	8.121611	8.040552	7.146293
212085_at	P12236	UNIPROT	11.16948	11.251725	11.543841	11.513643	11.196278
200980_s_at	P08559	UNIPROT	9.230633	9.423938	9.13345	9.333907	8.189258
209541_at	P05019	UNIPROT	4.360721	4.704376	4.376086	4.446836	4.389136
208996_s_at	P19387	UNIPROT	9.221101	8.81792	8.946719	8.968483	8.438492
204776_at	P35443	UNIPROT	5.855165	6.357134	5.967336	5.916306	6.467756
200817_x_at	P46783	UNIPROT	12.5952	12.593261	12.692074	12.668727	12.504117
213762_x_at	P38159	UNIPROT	10.236981	9.866888	9.874807	10.005794	9.176859
217876_at	Q9Y5Q8	UNIPROT	7.115461	6.903964	7.101422	7.053333	7.286506
208629_s_at	P40939	UNIPROT	9.548975	9.051899	8.781895	8.56258	8.775328
205218_at	Q9H1D9	UNIPROT	5.292665	5.081182	4.973261	5.003327	4.50832
220960_x_at	P35268	UNIPROT	11.940607	11.869856	12.066956	11.90591	11.75493
213333_at	P40926	UNIPROT	6.998212	6.979474	6.755805	7.009733	6.586982
211525_s_at	P40197	UNIPROT	3.815077	3.906151	3.997319	3.832389	3.854276
209759_s_at	P42126	UNIPROT	7.681414	7.369056	7.40669	7.550189	7.255335
202069_s_at	P50213	UNIPROT	9.203558	6.996668	7.395548	7.488394	5.494327
209492_x_at	P56385	UNIPROT	10.149228	9.844217	10.10171	9.937341	9.301521
207042_at	Q14209	UNIPROT	5.733754	5.918359	5.9457	6.22878	6.084275
200882_s_at	P55036	UNIPROT	9.417151	9.129101	9.462504	9.32657	8.789662
210759_s_at	P25786	UNIPROT	10.58616	10.619302	10.595816	10.544255	9.749235
203865_s_at	P78563	UNIPROT	6.167521	6.112039	5.962991	5.982465	5.467249
213647_at	P51530	UNIPROT	7.282806	6.841088	6.954518	6.261261	6.30233
32723_at	Q05048	UNIPROT	5.4679	4.722058	5.151219	5.093306	4.676134
214329_x_at	P50591	UNIPROT	2.969573	3.282941	3.174161	3.176779	2.812419
201440_at	Q9BUQ8	UNIPROT	7.905156	7.566424	7.856427	7.930089	7.379544
212933_x_at	P26373	UNIPROT	11.698873	11.793733	11.858185	12.010428	11.720484
217299_s_at	O60934	UNIPROT	7.141844	5.430677	5.562643	5.866945	4.764016
212105_s_at	Q08211	UNIPROT	8.169417	6.498441	6.368283	6.472633	6.421425
212266_s_at	Q13243	UNIPROT	9.024131	8.573558	9.191127	9.097323	8.577876
201589_at	Q14683	UNIPROT	8.977824	7.231215	7.380885	7.626935	6.335739
212296_at	O00487	UNIPROT	10.379597	9.65914	9.988616	10.02746	9.320908
200044_at	Q13242	UNIPROT	10.247336	9.962542	10.192532	10.242334	9.744894
200710_at	P49748	UNIPROT	8.15654	8.129258	8.118218	8.392352	7.863261
204880_at	P16455	UNIPROT	7.276087	6.963342	6.891875	6.981507	7.455495
210513_s_at	P15692	UNIPROT	6.790132	6.873264	6.960807	6.860293	6.416581

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
208879_x_at	O94906	UNIPROT	7.43096	6.499695	6.859011	6.698537	7.199971
217466_x_at	P15880	UNIPROT	11.331643	11.173166	11.440099	11.043436	11.321433
203682_s_at	P26440	UNIPROT	6.811475	7.482288	7.134551	7.225296	6.708939
203577_at	Q92759	UNIPROT	6.764243	6.487934	6.622142	6.880814	6.583294
203719_at	P07992	UNIPROT	8.758197	8.57774	8.482864	8.26274	7.80016
212433_x_at	P15880	UNIPROT	12.776936	12.520867	12.62932	12.6302	12.470819
208368_s_at	P51587	UNIPROT	3.956142	3.998129	3.86776	3.885194	3.618329
209295_at	O14763	UNIPROT	8.29116	8.170766	8.572357	8.317677	7.392012
201803_at	P30876	UNIPROT	9.750821	9.077974	9.577329	9.597164	9.005851
210053_at	Q15542	UNIPROT	7.319029	6.477447	6.528353	6.481688	6.432456
202825_at	P12235	UNIPROT	8.255201	8.057333	8.093596	7.814849	8.063351
204169_at	P20839	UNIPROT	8.664386	8.266291	8.515363	8.725057	8.687772
218110_at	Q9HCS7	UNIPROT	5.720846	5.876389	5.454561	5.968999	6.391679
210998_s_at	P14210	UNIPROT	5.4186	5.610335	5.823909	6.003691	6.845868
201198_s_at	Q99460	UNIPROT	9.788193	9.673986	9.773343	9.638276	8.966852
205450_at	P46020	UNIPROT	7.153107	7.116394	6.941102	7.212252	6.989401
215905_s_at	Q96DI7	UNIPROT	9.168655	8.536674	8.534031	8.616264	7.868649
213706_at	P21695	UNIPROT	5.585896	6.530176	6.030147	5.738901	6.496565
200741_s_at	P42677	UNIPROT	12.20564	12.027277	12.183245	12.115343	12.044843
203669_s_at	O75907	UNIPROT	7.27671	7.308543	7.109521	7.344356	7.545278
214881_s_at	P17480	UNIPROT	6.064849	6.06121	5.74108	5.90616	6.127199
201469_s_at	P29353	UNIPROT	8.910978	8.608683	8.681909	8.882749	8.219096
204772_s_at	Q15361	UNIPROT	7.241907	6.887515	6.804638	7.218475	6.007179
209330_s_at	Q14103-4, Q14103-3	UNIPROT	9.107652	7.985692	8.373831	8.12001	7.281444
202275_at	P11413	UNIPROT	7.086871	6.875227	6.953473	7.128171	6.881813
209491_s_at	Q01432	UNIPROT	5.841318	6.511502	6.209597	6.601279	7.274412
204835_at	P09884	UNIPROT	7.511926	6.715581	6.232072	6.584987	5.799415
202589_at	P04818	UNIPROT	10.675139	10.437658	10.761341	10.586686	9.96438
208768_x_at	P35268	UNIPROT	11.966837	11.933611	12.214316	12.081071	11.907644
209184_s_at	Q9Y4H2	UNIPROT	6.269438	6.229143	6.406572	6.239836	6.799263
203159_at	O94925	UNIPROT	6.483419	6.726632	6.925954	6.670424	7.411012
204645_at	O60583	UNIPROT	6.021257	5.329542	5.802703	5.275198	5.198751
204920_at	P31327	UNIPROT	5.740428	5.750257	5.779318	6.07476	5.719159
203693_s_at	O00716	UNIPROT	7.824334	6.618135	6.906169	6.371591	5.716625
203377_s_at	O60508	UNIPROT	6.158431	4.980166	5.537014	5.337211	5.028948
212312_at	Q07817	UNIPROT	7.960803	8.104791	8.279502	8.635901	8.135587
211937_at	P23588	UNIPROT	9.919698	9.82196	9.931433	10.074172	9.604919
208308_s_at	P06744	UNIPROT	10.517076	10.621602	10.677032	10.633076	10.07623

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
213969_x_at	P47914	UNIPROT	12.462136	12.345185	12.49984	12.447213	12.446308
202190_at	Q05048	UNIPROT	7.064405	6.474143	6.247117	6.646168	6.734068
214853_s_at	P29353	UNIPROT	9.801668	9.509903	10.058091	10.056355	9.690202
200809_x_at	P30050	UNIPROT	12.928271	12.913048	12.905089	12.83471	12.849936
221775_x_at	P35268	UNIPROT	12.111857	12.041838	12.247887	12.070165	12.009706
206598_at	P01308	UNIPROT	5.159072	6.272712	6.163476	5.717088	6.392364
209302_at	P52434	UNIPROT	9.948438	9.48636	9.890668	9.990444	9.569192
219459_at	Q9NW08	UNIPROT	7.265324	6.611478	6.403883	6.446645	5.706531
212790_x_at	P40429	UNIPROT	13.177159	12.974195	13.032452	13.037567	13.004944
211277_x_at	P05067	UNIPROT	6.321787	6.384238	6.315905	6.303667	6.22844
212667_at	P09486	UNIPROT	4.556588	4.630852	5.375219	4.802965	4.575117
203158_s_at	O94925	UNIPROT	4.625439	5.158416	4.608612	4.605599	5.468435
209531_at	O43708	UNIPROT	6.703946	6.86502	6.532641	6.664418	7.152727
208624_s_at	Q04637	UNIPROT	7.482406	7.570213	7.547025	7.529762	7.109696
209685_s_at	P05771	UNIPROT	5.106767	5.345805	5.226008	5.146963	5.740857
205306_x_at	O15229	UNIPROT	5.659336	5.480293	6.071865	5.625	5.16524
212186_at	Q13085	UNIPROT	8.079548	7.947875	7.83708	7.714796	7.523639
205641_s_at	Q15628	UNIPROT	7.241828	7.465308	7.448834	7.392571	9.13406
209623_at	Q9HCC0	UNIPROT	8.931151	8.399201	8.341348	8.458262	8.276463
213523_at	P24864	UNIPROT	8.322307	8.161241	8.154066	8.193601	8.078759
205627_at	P32320	UNIPROT	5.472177	5.818648	6.012034	5.717371	7.382855
206024_at	P32754	UNIPROT	5.311784	5.734511	5.255204	5.310494	5.983543
214288_s_at	P20618	UNIPROT	11.059582	10.832758	11.122911	10.96542	10.457156
214737_x_at	P07910	UNIPROT	10.703245	10.635965	10.756022	10.749912	10.083459
201802_at	Q99808	UNIPROT	8.518491	8.321326	8.588907	8.831359	8.564027
203062_s_at	Q14676	UNIPROT	6.834147	6.578447	6.698749	6.636466	5.827585
217238_s_at	P05062	UNIPROT	4.593762	5.078354	4.737669	4.799875	5.38949
205467_at	Q92851	UNIPROT	5.811189	5.834435	6.012034	5.997243	6.738556
201435_s_at	P06730	UNIPROT	9.903185	8.470213	9.193214	9.386042	8.155856
219350_s_at	Q9NR28	UNIPROT	9.494073	8.649929	8.687045	8.825372	8.162337
208813_at	P17174	UNIPROT	7.825605	7.429299	7.368549	7.515978	6.822389
206012_at	O00292	UNIPROT	6.438841	6.438841	6.405608	6.77753	6.789478
205363_at	O75936	UNIPROT	3.897506	4.042315	4.244026	4.102333	4.962
210955_at	Q92851	UNIPROT	6.263238	6.496491	5.820321	6.28294	6.61097
205443_at	Q16533	UNIPROT	6.702313	5.746154	6.251956	5.983632	5.466195
209580_s_at	O95243	UNIPROT	7.01841	5.506367	5.569716	6.291855	5.675383
204767_s_at	P39748	UNIPROT	8.286109	7.76924	7.817214	7.764345	6.851201
219762_s_at	Q9Y3U8	UNIPROT	11.063469	10.956219	11.316692	11.316232	10.856089
201695_s_at	P00491	UNIPROT	10.10934	9.239273	9.894939	9.743561	9.177556

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201700_at	P30281	UNIPROT	9.323472	9.059151	8.815511	8.66447	8.412637
210543_s_at	P78527	UNIPROT	8.630409	8.42098	8.68064	8.665538	7.758363
210250_x_at	P30566	UNIPROT	9.049349	8.430243	8.683638	8.765285	8.107734
201425_at	P05091	UNIPROT	8.423986	7.694138	7.628218	7.753249	7.528629
205032_at	P17301	UNIPROT	5.18043	5.732334	5.307769	5.447903	5.390816
2028_s_at	Q01094	UNIPROT	6.735078	6.680542	6.569282	6.441178	7.063465
202282_at	Q99714	UNIPROT	9.565957	9.401927	9.654738	9.582455	9.299996
203067_at	O00330	UNIPROT	8.230866	6.563094	7.21067	7.202101	6.6081
204128_s_at	P40938	UNIPROT	8.176849	6.385384	7.173865	6.986304	5.737995
211554_s_at	O14727	UNIPROT	7.078943	6.95639	6.993839	6.938512	5.94287
222343_at	O43521	UNIPROT	5.116054	5.335215	5.546124	5.079655	6.059923
201676_x_at	P25786	UNIPROT	10.71285	10.351996	10.457325	10.423599	9.868074
219308_s_at	Q9Y6K8	UNIPROT	6.047512	6.050444	6.418438	6.041743	6.146389
201250_s_at	P11166	UNIPROT	7.883127	7.175516	7.262309	7.347226	7.154256
205480_s_at	Q16851	UNIPROT	8.044141	7.15788	6.633117	7.145251	6.557084
201071_x_at	O75533	UNIPROT	9.64522	9.08175	9.286762	9.054866	9.011381
203616_at	P06746	UNIPROT	8.917364	8.38848	8.570984	8.420939	8.471303
208789_at	Q6NZI2	UNIPROT	8.488095	7.927674	7.969387	8.157894	7.547794
209438_at	P46019	UNIPROT	5.845306	6.123539	6.068622	5.917597	7.473969
203135_at	P20226	UNIPROT	7.332831	6.863641	7.04701	6.908774	6.753721
205754_at	P00734	UNIPROT	6.317555	7.125203	7.252921	7.185548	7.068487
203378_at	O94913	UNIPROT	5.640286	5.526383	5.570193	5.817288	4.421804
213226_at	P20248	UNIPROT	7.70731	6.068637	6.297037	6.377557	5.414069
209555_s_at	P16671	UNIPROT	3.619623	3.445532	3.587162	3.588419	3.334743
208383_s_at	P35558	UNIPROT	3.391993	3.66917	3.875381	3.606839	3.949396
212626_x_at	P07910	UNIPROT	10.587549	10.480381	10.730792	10.44212	9.868119
211851_x_at	P38398	UNIPROT	6.796463	6.925693	6.953595	6.929855	7.534204
203989_x_at	P25116	UNIPROT	2.951983	3.160479	3.597118	3.23523	3.011754
201572_x_at	P32321	UNIPROT	8.937353	8.238147	8.432515	8.618601	8.171133
203984_s_at	P55211	UNIPROT	6.59568	7.132778	6.92213	6.946636	7.214212
211487_x_at	P08708	UNIPROT	12.825236	12.877931	12.88052	12.828907	12.8335
200596_s_at	Q14152	UNIPROT	8.897148	8.746212	9.196672	9.247983	8.523407
204717_s_at	Q14542	UNIPROT	5.821476	6.458008	6.201004	6.054504	6.090778
203409_at	Q92466	UNIPROT	7.159403	7.153769	7.396239	7.38383	7.235098
201030_x_at	P07195	UNIPROT	11.982086	11.763823	11.826708	11.762612	11.528636
211972_x_at	P05388	UNIPROT	12.817015	12.738505	12.807788	12.804851	12.740921
203860_at	P05165	UNIPROT	3.639517	3.72496	3.466484	3.636336	3.66396
201476_s_at	P23921	UNIPROT	9.257237	8.675714	8.737518	8.609994	7.893563
204696_s_at	P30304	UNIPROT	7.427352	7.463927	7.222281	7.619449	7.815613

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
209358_at	Q15544	UNIPROT	6.665313	5.614459	6.301372	6.222007	5.174726
205301_s_at	O15527	UNIPROT	5.409563	6.726551	6.596292	5.84068	6.157649
210014_x_at	O43837	UNIPROT	8.702057	8.697218	8.604378	8.640954	7.97978
202634_at	P53803	UNIPROT	8.266753	6.703818	6.748953	6.801819	5.750818
217555_at	Q14683	UNIPROT	4.162516	5.31482	5.134983	4.973786	5.76896
212142_at	P33991	UNIPROT	8.49455	7.539542	7.84128	7.841746	7.515678
203845_at	Q92831	UNIPROT	5.743338	4.815848	4.447951	5.154267	4.539341
200595_s_at	Q14152	UNIPROT	9.331758	7.902866	8.696503	8.214131	6.715684
206108_s_at	Q13247	UNIPROT	9.570556	9.33582	9.77859	9.662961	8.893864
211692_s_at	Q9BXH1	UNIPROT	6.481966	8.696438	8.57141	8.212465	8.271711
49452_at	O00763	UNIPROT	5.49761	6.029141	5.611945	5.680882	6.035739
32837_at	O15120	UNIPROT	9.524274	9.512611	9.514721	9.517943	9.336925
217917_s_at	Q9NP97	UNIPROT	9.317621	8.834067	8.995485	9.061414	8.658213
209044_x_at	Q15427	UNIPROT	8.496626	7.587935	7.924103	8.442301	7.228473
210775_x_at	P55211	UNIPROT	7.150512	6.784858	6.99435	6.937644	6.794914
205672_at	P23025	UNIPROT	6.818845	6.1195	6.54816	6.388107	6.031873
200003_s_at	P46779	UNIPROT	12.401259	12.054083	12.275169	12.206342	12.015476
202325_s_at	P18859	UNIPROT	10.001858	8.853816	9.020683	9.373503	8.672954
201128_s_at	P53396	UNIPROT	10.138989	8.993547	9.08733	8.759354	8.064415
204988_at	P02675	UNIPROT	4.411809	5.596477	5.306636	5.14658	5.677364
212782_x_at	P52435	UNIPROT	10.052274	9.865619	9.925464	10.063108	9.405817
211527_x_at	P15692	UNIPROT	6.922923	6.718623	6.794666	6.608943	7.240261
200786_at	Q99436	UNIPROT	11.255881	11.060175	11.150428	11.096829	10.795571
222035_s_at	P51003	UNIPROT	8.763574	6.89264	7.545736	7.446439	5.63836
203572_s_at	P49848	UNIPROT	8.262266	7.808682	7.840137	8.205212	7.956042
203376_at	O60508	UNIPROT	7.886117	7.411513	7.728948	7.619968	7.595917
201756_at	P15927	UNIPROT	9.168098	8.190901	8.014751	8.199542	6.833475
202763_at	P42574	UNIPROT	7.015512	6.310018	6.489018	6.883636	5.925353
204119_s_at	P55263	UNIPROT	8.562034	7.925743	7.963558	8.068847	7.731724
216026_s_at	Q07864	UNIPROT	7.280993	7.136605	7.551967	7.379877	7.605543
203310_at	O00186	UNIPROT	6.684546	4.911923	5.182446	5.208088	4.519978
218381_s_at	P26368	UNIPROT	8.403224	7.476365	7.08627	7.497091	6.467463
209747_at	P10600	UNIPROT	6.857628	6.782446	6.644668	6.550998	7.767401
203684_s_at	P10415	UNIPROT	6.031615	6.771752	6.534263	6.47158	6.081681
211925_s_at	Q9NQ66	UNIPROT	3.220919	3.282403	3.100283	3.140374	4.568987
217870_s_at	P30085	UNIPROT	8.629057	7.469417	7.831804	7.98415	6.667016
210559_s_at	P06493	UNIPROT	9.363218	8.625771	9.414582	9.246794	8.611739
204127_at	P40938	UNIPROT	8.652538	6.651088	7.665029	7.168007	6.581374
202906_s_at	O60934	UNIPROT	8.14981	6.929509	7.311685	7.557238	6.463904

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
1861_at	Q92934	UNIPROT	6.437999	6.620092	6.20117	6.407735	5.717815
217521_at	P42357	UNIPROT	5.943116	6.086246	6.254091	5.794294	6.371929
204476_s_at	P11498	UNIPROT	6.455419	6.934931	7.22883	6.783238	8.015755
207143_at	Q00534	UNIPROT	6.44469	6.209764	6.054255	6.298526	7.0914
204232_at	P30273	UNIPROT	5.68281	6.051915	6.087536	5.767474	6.348732
215966_x_at	P32189, Q14409	UNIPROT	5.168702	4.864834	5.17687	5.152277	5.662839
203887_s_at	P07204	UNIPROT	3.882649	4.578769	5.517865	4.718617	4.864161
210865_at	P48023	UNIPROT	5.437789	6.621063	6.047235	5.799085	7.161202
204001_at	Q92966	UNIPROT	5.310805	4.471446	4.109228	4.691793	3.889228
208705_s_at	P55010	UNIPROT	10.794734	10.501481	10.565956	10.659577	9.769128
43427_at	O00763	UNIPROT	5.305617	5.479529	5.441276	5.228118	6.420738
209219_at	P18615	UNIPROT	8.35494	8.406772	8.564617	8.584821	8.724309
202471_s_at	P51553	UNIPROT	8.582943	7.553993	7.850763	7.727763	8.104654
206789_s_at	P14859	UNIPROT	6.62013	6.453272	6.462581	6.585832	6.682135
214317_x_at	P46781	UNIPROT	11.113223	11.300601	11.290052	11.546929	11.196608
201746_at	P04637	UNIPROT	6.338484	5.480857	5.469908	5.341843	4.667539
209579_s_at	O95243	UNIPROT	7.591256	6.825902	6.941102	6.596201	6.104799
216236_s_at	P11169	UNIPROT	6.811244	6.140382	6.110984	6.383079	6.464731
212578_x_at	P08708	UNIPROT	12.798212	12.769934	12.858527	12.800725	12.687417
216977_x_at	P09661	UNIPROT	8.714794	8.643006	8.72831	8.926145	8.091123
201554_x_at	P46976	UNIPROT	8.987565	8.4922	8.751822	8.510156	8.571229
33132_at	Q10570	UNIPROT	7.789785	7.956179	8.148448	8.31443	8.074275
200886_s_at	P18669	UNIPROT	11.590258	11.315353	11.412123	11.461226	11.3205
209946_at	P49767	UNIPROT	4.655604	4.876323	4.776166	4.402174	4.635826
217874_at	P53597	UNIPROT	8.711065	8.73115	8.7129	8.695216	8.098453
200754_x_at	Q01130	UNIPROT	11.126603	10.669419	10.898212	11.161469	10.428004
210671_x_at	P45983	UNIPROT	6.308824	6.143314	6.040716	5.753849	5.871641
210708_x_at	Q92851	UNIPROT	6.200788	6.191228	5.8753	6.000472	6.793163
213649_at	Q16629	UNIPROT	7.732759	6.592537	7.109072	6.877078	6.771013
203685_at	P10415	UNIPROT	5.022142	4.717183	5.081411	4.447905	4.689114
211270_x_at	P26599	UNIPROT	10.437758	10.336688	10.233294	10.407595	10.070366
216306_x_at	P26599	UNIPROT	10.518264	10.342458	10.168897	10.628335	10.009532
208972_s_at	P05496	UNIPROT	9.062417	9.050123	9.176697	9.201928	8.706451
213356_x_at	P09651	UNIPROT	12.157019	11.994462	11.868542	11.818157	11.818508
32541_at	P48454	UNIPROT	3.419086	4.521882	3.699134	3.71221	3.837411
207000_s_at	P48454	UNIPROT	3.858478	3.898113	4.252328	4.180345	4.013475
205034_at	O96020	UNIPROT	8.195946	5.151597	6.016109	5.861116	4.826101
213302_at	O15067	UNIPROT	8.793432	8.089324	8.212112	8.051263	7.216769
201968_s_at	P36871	UNIPROT	7.831718	7.478105	7.374574	7.213849	6.89031

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201070_x_at	O75533	UNIPROT	8.710159	7.806623	7.830044	8.04764	7.730144
220475_at	Q9HAS3	UNIPROT	5.562543	6.104791	5.661571	5.880369	6.222363
202959_at	P22033	UNIPROT	5.773601	4.475006	5.359381	4.549294	5.140604
200703_at	P63167	UNIPROT	10.921833	10.342357	10.430411	10.525991	10.147492
202148_s_at	P32322	UNIPROT	8.95001	8.841911	8.957185	8.875305	8.882637
205719_s_at	P00439	UNIPROT	3.413216	3.491391	3.669281	3.61363	3.370041
204385_at	Q16719	UNIPROT	7.267973	7.439515	7.388241	7.354973	7.384531
210453_x_at	O75964	UNIPROT	10.950499	10.763027	10.795942	10.88665	10.536162
208799_at	P28074	UNIPROT	10.642081	10.515313	10.686368	10.772247	10.153988
214702_at	P02751	UNIPROT	3.558395	3.87308	3.560866	3.337739	3.59638
207347_at	Q03468	UNIPROT	5.604729	5.42431	5.823498	5.335885	5.901948
201267_s_at	P17980	UNIPROT	9.542543	9.302652	9.299103	9.334086	8.864677
207113_s_at	P01375	UNIPROT	6.232658	6.01853	6.480775	6.09577	7.361104
214271_x_at	P30050	UNIPROT	12.539	12.290425	12.31064	12.314399	12.204783
212191_x_at	P26373	UNIPROT	12.093969	11.96466	12.103158	12.033764	11.969696
205996_s_at	P54819	UNIPROT	7.965288	7.086481	7.505412	7.525247	7.124667
205649_s_at	P02671	UNIPROT	3.043659	3.065334	3.030422	3.163733	3.360071
207515_s_at	O15160	UNIPROT	8.168448	7.929661	8.170357	8.135851	7.628292
210137_s_at	P32321	UNIPROT	9.476488	8.548538	9.032253	9.125725	7.997818
203655_at	P18887	UNIPROT	5.629815	7.041225	6.677192	7.001603	6.965554
211666_x_at	P39023	UNIPROT	12.36487	12.231855	12.352553	12.354754	12.235575
201638_s_at	Q10570	UNIPROT	7.021953	7.117973	6.920544	6.305569	7.404919
208827_at	P28072	UNIPROT	10.040118	9.884525	9.990363	9.944297	9.613998
205307_s_at	O15229	UNIPROT	3.896223	4.143567	4.347375	4.171585	4.537009
202404_s_at	P08123	UNIPROT	3.666756	3.839818	3.835395	4.145096	4.081136
208922_s_at	Q9UBU9	UNIPROT	8.732507	8.277939	8.390503	8.860596	8.531554
204207_s_at	O60942	UNIPROT	7.413107	6.609172	7.023109	6.262148	6.015563
204768_s_at	P39748	UNIPROT	8.104341	7.804847	8.138322	7.961222	7.36877
217757_at	P01023	UNIPROT	5.448711	5.603136	5.399572	5.659238	6.239306
211746_x_at	P25786	UNIPROT	10.629668	10.251234	10.420996	10.194235	10.037564
220507_s_at	Q9UBR1	UNIPROT	5.24665	5.837583	5.274108	5.527042	6.145429
200753_x_at	Q01130	UNIPROT	9.461396	8.250334	9.113604	8.909648	8.380017
206916_x_at	P17735	UNIPROT	4.604538	5.336005	5.196324	5.160738	4.712983
201118_at	P52209	UNIPROT	9.098291	8.670028	8.739764	8.822142	8.475341
200657_at	P05141	UNIPROT	11.665229	11.55971	11.652719	11.585351	11.355869
219693_at	Q9NRZ5	UNIPROT	5.231411	5.806378	5.984006	5.721688	6.870446
205909_at	P56282	UNIPROT	8.310098	7.273273	7.139156	7.335325	6.828843
211577_s_at	P05019	UNIPROT	6.556086	6.751458	6.717987	6.878163	8.003004
205401_at	O00116	UNIPROT	7.749557	6.847332	6.741719	6.962777	6.349407

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
202905_x_at	O60934	UNIPROT	8.27594	7.343896	7.821223	7.554161	6.628637
211715_s_at	Q02338	UNIPROT	7.209696	6.888483	6.763008	6.852751	6.812942
216956_s_at	P08514	UNIPROT	5.237145	6.22087	6.429751	6.183197	6.381712
211023_at	P11177	UNIPROT	8.517092	6.746978	6.784943	6.924254	6.133694
202678_at	P52657	UNIPROT	9.664592	8.763221	9.225722	8.984698	7.763868
202930_s_at	Q9P2R7	UNIPROT	7.713868	5.772803	6.010438	6.319002	4.221571
209773_s_at	P31350	UNIPROT	10.967968	10.480279	10.621011	10.773993	10.130692
206069_s_at	P28330	UNIPROT	4.615967	4.583712	4.654696	4.63165	4.964814
213373_s_at	Q14790	UNIPROT	7.290479	5.843094	5.810642	6.213912	4.937927
203282_at	Q04446	UNIPROT	8.214832	6.205654	6.470867	6.687503	5.781365
212224_at	P00352	UNIPROT	3.472883	3.624168	3.605889	3.680708	4.747297
221494_x_at	Q9UBQ5	UNIPROT	9.975378	9.962201	10.13206	10.034275	9.667332
202907_s_at	O60934	UNIPROT	8.855374	7.389115	7.711434	7.61487	6.502275
207686_s_at	Q14790	UNIPROT	6.326775	6.200608	5.918131	6.12213	5.899614
204200_s_at	P01127	UNIPROT	5.983182	6.793424	6.501249	6.827583	7.537413
203305_at	P00488	UNIPROT	5.54931	5.586763	5.367018	5.541579	5.768199
214584_x_at	O00763	UNIPROT	5.775011	5.565914	5.522157	5.55862	5.714112
215230_x_at	Q99613	UNIPROT	9.166665	8.780829	9.038867	9.236313	8.557118
210505_at	P40394	UNIPROT	4.616113	4.887767	4.736122	4.950524	5.146845
200830_at	Q13200	UNIPROT	11.13852	11.086037	11.35615	11.263503	10.915203
205650_s_at	P02671	UNIPROT	6.224943	6.206212	5.814065	6.073402	6.826751
211167_s_at	P35557	UNIPROT	5.585332	6.153509	6.75012	5.993667	7.0171
202990_at	P06737	UNIPROT	7.433899	6.477903	6.887988	7.196728	6.781919
215088_s_at	Q99643	UNIPROT	8.108883	6.949989	7.037611	7.096805	5.968785
208625_s_at	Q04637	UNIPROT	8.271628	8.633351	8.738531	8.959454	8.005644
214664_at	P22234	UNIPROT	5.301968	5.435528	5.820321	5.342643	5.088945
201232_s_at	Q9UNM6	UNIPROT	9.105732	8.890251	9.299989	9.290018	8.58031
204120_s_at	P55263	UNIPROT	6.012971	4.147663	4.413291	4.292401	3.569847
210663_s_at	Q16719	UNIPROT	6.088517	6.418146	6.979012	6.598522	7.200426
201016_at	P47813	UNIPROT	9.569518	7.661318	8.223201	7.898378	7.035055
212351_at	Q13144	UNIPROT	7.829288	7.721493	7.575629	7.851012	8.087782
203396_at	P25789	UNIPROT	10.109431	8.911984	9.546629	9.416707	8.424001
218016_s_at	Q9NVU0	UNIPROT	7.228336	6.475095	7.183438	7.298787	6.567605
203055_s_at	Q92888	UNIPROT	6.865227	8.344627	7.963356	7.912671	8.149351
206235_at	P49917	UNIPROT	6.374124	6.059644	6.482781	6.455042	6.345835
201159_s_at	P30419	UNIPROT	7.001465	6.647226	6.862299	6.539381	7.31238
221510_s_at	O94925	UNIPROT	8.759166	6.102349	7.003722	7.148008	5.093583
217747_s_at	P46781	UNIPROT	11.720414	11.524564	11.746749	11.669875	11.318601
201632_at	Q14232	UNIPROT	8.352928	7.653628	7.251649	7.810645	7.102353

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
205711_x_at	P36542	UNIPROT	10.847572	10.692578	10.626287	10.709642	10.385678
206768_at	Q92901	UNIPROT	5.274871	5.012249	5.363126	4.896686	6.210479
209696_at	P09467	UNIPROT	6.385062	6.950056	6.499617	6.304097	7.141628
201202_at	P12004	UNIPROT	10.284026	9.502253	9.97292	9.765613	8.987297
202726_at	P18858	UNIPROT	7.466196	7.378346	7.504643	7.901116	7.148899
213080_x_at	P46777	UNIPROT	12.177579	12.075386	12.29697	12.164402	12.005799
217564_s_at	P31327	UNIPROT	3.879812	3.548239	4.207137	3.885642	3.491347
201517_at	P52298	UNIPROT	7.867889	7.313724	6.772304	7.349587	6.535792
216705_s_at	P00813	UNIPROT	6.035648	6.246071	5.971232	6.530779	6.398339
216252_x_at	P25445	UNIPROT	7.873767	7.398967	7.715952	7.093015	6.03712
31835_at	P04196	UNIPROT	5.092578	5.468521	5.433089	5.292327	5.709676
212537_x_at	P18621	UNIPROT	12.602394	12.631152	12.692209	12.631123	12.617154
204608_at	P04424	UNIPROT	7.07019	6.409071	6.640281	6.468922	6.683327
201013_s_at	P22234	UNIPROT	10.598758	9.801981	10.079178	10.070469	9.267285
210964_s_at	O15488	UNIPROT	5.020367	5.236143	4.997664	5.169324	4.825088
210646_x_at	P40429	UNIPROT	13.26098	12.977228	13.043476	13.110612	13.046413
210630_s_at	P43351	UNIPROT	5.200951	4.450443	5.357744	4.989987	4.788143
203270_at	P23919	UNIPROT	7.784797	7.46725	7.822538	7.867003	7.967563
215486_at	P21108	UNIPROT	4.491702	4.244409	4.079441	4.019463	4.768466
200951_s_at	P30279	UNIPROT	6.924514	6.168954	6.499617	6.399584	6.422875
221284_s_at	P12931-1	UNIPROT	5.374468	5.774499	6.391434	5.531501	7.238954
213041_s_at	P30049	UNIPROT	7.921658	8.380944	8.360407	8.552249	8.04248
211755_s_at	P24539	UNIPROT	10.706606	9.983634	10.254928	10.3036	9.666507
200005_at	O15371	UNIPROT	9.609852	9.099299	9.73072	9.530097	9.194303
214431_at	P49915	UNIPROT	9.082274	8.689639	8.907057	9.039146	9.05439
214333_x_at	P51553	UNIPROT	7.61286	7.809582	7.711924	7.620138	8.265952
203352_at	O43929	UNIPROT	6.383235	5.728723	5.498061	5.139763	4.833146
211150_s_at	P10515	UNIPROT	7.599089	6.873851	6.875889	6.694425	6.27861
211553_x_at	O14727	UNIPROT	5.235257	5.101976	5.078106	4.902846	4.925408
200737_at	P00558	UNIPROT	9.418959	9.106823	9.461665	9.400704	9.037388
211569_s_at	Q16836	UNIPROT	7.362483	6.339188	6.288521	6.335104	5.680823
209434_s_at	Q06203	UNIPROT	7.940503	6.520118	6.926511	7.165	6.852271
201144_s_at	P05198	UNIPROT	10.281545	9.851864	9.902806	9.941353	9.804765
208745_at	O75964	UNIPROT	7.777387	7.257564	7.274146	6.514125	5.846634
207249_s_at	O43868	UNIPROT	4.747699	5.307544	5.244213	5.630124	5.173248
203422_at	P28340	UNIPROT	7.461653	7.673587	7.880237	7.768297	7.831144
206521_s_at	P52655	UNIPROT	5.311204	5.29623	5.063546	5.601158	5.320458
203213_at	P06493	UNIPROT	8.290609	6.955425	7.469123	7.511372	6.754846
200820_at	P48556	UNIPROT	10.072635	9.848983	10.187658	10.064907	9.623905

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
203530_s_at	Q12846	UNIPROT	7.700227	7.29052	7.056197	7.558255	6.947777
202824_s_at	Q15369	UNIPROT	10.268689	9.607114	9.656825	9.804657	9.448713
206967_at	O60563	UNIPROT	7.286515	6.494979	6.802834	6.211327	7.118125
201031_s_at	P31943	UNIPROT	10.594731	9.674178	9.884453	9.599683	8.619409
202505_at	P08579	UNIPROT	9.596732	8.57365	9.118913	9.265683	7.992212
202688_at	P50591	UNIPROT	3.847998	3.901953	4.02623	3.801661	3.9817
213222_at	Q9NQ66	UNIPROT	4.866781	4.78956	4.722798	5.009671	4.437584
203198_at	P50750	UNIPROT	8.198615	7.681974	7.804032	7.872712	7.740203
212174_at	P54819	UNIPROT	8.384702	7.383795	7.552122	7.853089	6.417591
204126_s_at	O75419	UNIPROT	7.573737	7.480732	7.356507	7.404012	7.009485
204639_at	P00813	UNIPROT	7.409752	6.465222	6.832888	6.783909	7.093193
204290_s_at	Q02252	UNIPROT	5.983111	5.80184	6.03842	5.700119	5.926911
212016_s_at	P26599	UNIPROT	9.620616	9.626154	9.885677	9.887927	9.280217
218685_s_at	Q53HV7	UNIPROT	6.813249	6.356115	6.322609	6.220988	5.727254
206259_at	P04070	UNIPROT	5.685165	6.746236	6.563462	6.41752	6.904747
221539_at	Q13541	UNIPROT	8.845008	8.812646	8.72207	8.924043	8.908864
201110_s_at	P07996	UNIPROT	3.132421	3.251601	3.528262	3.637983	3.319552
213632_at	Q02127	UNIPROT	6.438224	6.537465	6.607389	6.644704	6.997661
205436_s_at	P16104	UNIPROT	10.170704	9.963069	10.073415	10.245886	9.58926
207858_s_at	P30613-2, P30613-1	UNIPROT	5.521666	5.679216	5.436984	5.464934	6.328917
205024_s_at	Q06609	UNIPROT	7.975212	7.416474	7.131062	7.231876	7.64578
201437_s_at	P06730	UNIPROT	8.241485	5.595114	6.527848	5.98401	5.449894
202403_s_at	P08123	UNIPROT	6.210271	6.481707	6.385798	6.388287	6.562552
215676_at	Q92994	UNIPROT	5.987401	6.446941	6.206046	6.908977	7.383886
217373_x_at	Q00987	UNIPROT	8.1074	8.428684	9.232731	8.320517	7.488802
215977_x_at	P32189	UNIPROT	6.138423	6.17411	6.130603	6.812825	6.146905
200956_s_at	Q08945	UNIPROT	8.960286	9.042873	9.164509	9.468306	8.784022
208643_s_at	P13010	UNIPROT	9.872576	8.816738	8.918111	9.352219	8.397658
202780_at	P55809	UNIPROT	8.832231	8.635551	8.334351	8.453614	7.965539
200014_s_at	P07910	UNIPROT	10.371458	9.548578	9.978313	9.871472	8.753136
202453_s_at	P32780	UNIPROT	7.888727	7.603993	7.37771	7.826821	7.162883
205736_at	P15259	UNIPROT	5.014093	5.534039	6.176001	5.328666	6.758579
208706_s_at	P55010	UNIPROT	9.274387	8.728498	8.678656	9.002993	7.757935
217583_at	P00439	UNIPROT	3.929798	4.527537	4.576715	4.148885	5.175525
204705_x_at	P05062	UNIPROT	5.565426	6.379799	5.757574	5.694981	6.410109
206603_at	P14672	UNIPROT	5.914464	6.50952	6.121187	6.238978	6.989317
211333_s_at	P48023	UNIPROT	4.61866	5.19996	5.002885	4.646943	5.57014
202420_s_at	Q08211	UNIPROT	9.02678	9.03271	9.293335	9.294401	9.230291

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
201282_at	Q02218	UNIPROT	6.293081	6.688532	6.236713	6.375934	6.546913
204531_s_at	P38398	UNIPROT	6.300711	6.326498	6.426063	6.346153	5.654794
200966_x_at	P04075	UNIPROT	11.714049	11.711204	11.925901	12.048988	11.732409
1053_at	P35250	UNIPROT	8.040078	7.147358	6.706705	6.794622	7.475157
210997_at	P14210	UNIPROT	4.794056	4.377339	4.803335	4.939253	3.827828
201673_s_at	P13807	UNIPROT	7.774215	7.567967	7.588059	7.776212	7.35166
206536_s_at	P98170	UNIPROT	4.789091	4.44969	4.384456	4.430895	4.495076
213011_s_at	P60174	UNIPROT	10.971125	10.620147	10.697464	10.753887	10.337161
206923_at	P17252	UNIPROT	4.741097	4.414001	4.372043	4.448974	4.495822
208631_s_at	P40939	UNIPROT	8.624606	8.023393	8.478407	8.153955	7.505505
205930_at	P29083	UNIPROT	7.347934	6.109545	5.993483	6.254774	5.84963
201483_s_at	P63272	UNIPROT	8.228716	7.757162	7.939844	7.913256	7.375431
214263_x_at	P19387	UNIPROT	7.405372	6.969381	7.07684	6.876814	6.723067
204858_s_at	P19971	UNIPROT	7.207801	7.686434	7.557297	7.661776	7.891329
212490_at	O75937	UNIPROT	5.676547	5.727901	5.265049	5.428639	5.515384
206177_s_at	P05089	UNIPROT	5.136785	5.195119	5.176903	5.189474	5.762585
201509_at	O43837	UNIPROT	7.648695	7.656252	7.794074	7.655859	8.134369
213588_x_at	P50914	UNIPROT	12.399282	12.400555	12.359095	12.324098	12.258802
202029_x_at	P63173	UNIPROT	12.48684	12.740166	12.559385	12.564844	12.47966
216941_s_at	Q53T94	UNIPROT	6.278425	5.615937	5.675055	5.664059	5.645555
204244_s_at	Q9UBU7	UNIPROT	7.81536	5.720144	6.665688	6.324625	5.967376
203683_s_at	P49765	UNIPROT	5.728584	5.781527	5.85425	5.968068	5.8516
215037_s_at	Q07817	UNIPROT	7.873976	7.625724	8.288207	8.122546	7.770709
206883_x_at	P14770	UNIPROT	6.481349	7.606607	7.249754	7.116394	7.653278
205966_at	Q15543	UNIPROT	6.564734	4.317461	4.92683	4.344806	4.138579
202819_s_at	Q14241	UNIPROT	6.146816	6.072356	5.797975	5.535153	7.300117
202331_at	P12694	UNIPROT	7.508954	7.476324	7.670516	7.663111	8.075186
212525_s_at	P16104	UNIPROT	7.295649	7.647826	7.375368	7.640539	7.893816
205394_at	O14757	UNIPROT	7.837645	6.104783	6.596292	6.093403	5.269023
206844_at	O00757	UNIPROT	5.982892	6.252279	6.171852	6.226708	6.465429
203234_at	Q16831	UNIPROT	10.564452	10.812991	10.8775	11.114509	10.556818
204686_at	P35568	UNIPROT	4.990937	5.050183	5.279676	5.147882	4.478041
213090_s_at	O00268	UNIPROT	6.663714	5.670782	5.417055	5.574927	6.112522
202246_s_at	P11802	UNIPROT	9.960116	9.719463	9.79642	9.858319	9.465535
213263_s_at	Q15366	UNIPROT	7.325495	6.134783	6.60815	6.861173	6.533362
201143_s_at	P05198	UNIPROT	7.599705	6.150793	6.546611	6.747275	6.000284
202070_s_at	P50213	UNIPROT	8.49537	7.494978	7.805451	7.710735	7.662377
209675_s_at	Q9BUJ2	UNIPROT	7.436343	7.463707	7.282449	7.94964	7.379817
215091_s_at	Q92664	UNIPROT	10.43142	10.099599	10.328126	10.174641	9.421576

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
213564_x_at	P07195	UNIPROT	11.933728	11.754411	11.837093	11.819141	11.71889
206662_at	P35754	UNIPROT	11.175459	10.791676	10.901162	10.885351	10.569222
203816_at	Q16854	UNIPROT	7.78841	7.735111	7.703812	7.665077	5.954879
203178_at	P50440	UNIPROT	3.194517	3.134574	3.304548	3.285271	2.938238
214452_at	P54687	UNIPROT	3.484284	3.754474	3.520729	3.44458	4.518838
200665_s_at	P09486	UNIPROT	3.604601	4.284063	4.043229	3.649949	4.252282
201532_at	P25788	UNIPROT	10.13337	9.330707	9.563771	9.680736	8.65337
203085_s_at	P01137	UNIPROT	7.224516	7.162636	7.280628	7.711719	7.389339
200946_x_at	P00367	UNIPROT	8.845966	8.146341	8.369288	8.335673	7.13174
202502_at	P11310	UNIPROT	8.366006	6.686038	7.177685	7.048649	5.50323
210401_at	P51575	UNIPROT	6.667129	6.844708	6.586614	6.663518	6.939077
221590_s_at	Q02252	UNIPROT	4.013343	4.121569	4.294652	4.069839	4.112604
221798_x_at	P15880	UNIPROT	13.237291	13.281076	13.193286	13.252836	13.244478
202311_s_at	P02452	UNIPROT	3.600641	3.632403	4.210206	3.64601	4.42546
201696_at	Q08170	UNIPROT	8.448596	8.000777	8.123095	8.227575	7.994104
201480_s_at	O00267	UNIPROT	7.508318	7.833599	7.858905	7.998236	7.705414
204947_at	Q01094	UNIPROT	6.829663	6.95662	6.775948	6.999158	7.067027
205393_s_at	O14757	UNIPROT	6.495867	5.21946	5.564137	5.309667	5.179269
215711_s_at	P30291	UNIPROT	7.386221	6.732789	7.511542	7.289641	6.941217
207540_s_at	P43405	UNIPROT	6.544286	5.853181	6.016933	5.994597	6.283072
205657_at	P46952	UNIPROT	6.401214	6.847374	6.815913	6.893719	6.990771
213149_at	P10515	UNIPROT	6.779773	5.978874	5.829249	5.781504	5.712052
211212_s_at	O43913	UNIPROT	7.796423	6.204621	6.733342	6.515383	5.79997
201093_x_at	P31040	UNIPROT	8.67209	8.830175	9.06192	8.873828	8.599923
202757_at	Q8WX92	UNIPROT	8.364107	7.72853	7.778791	7.917656	6.806755
200792_at	P12956	UNIPROT	11.095516	10.888019	11.110119	11.066331	10.830563
201909_at	P22090	UNIPROT	6.403679	6.522388	6.514102	5.946303	6.060739
203209_at	P40937	UNIPROT	8.17103	6.702443	6.544935	7.057652	5.755144
211429_s_at	P01009	UNIPROT	5.921348	5.771245	5.808675	6.029079	6.144338
205085_at	Q13415	UNIPROT	6.577709	6.183525	6.304582	6.455241	6.08116
204493_at	P55957	UNIPROT	7.99269	6.83911	6.8849	7.039121	6.436318
211300_s_at	P04637	UNIPROT	6.138562	5.488734	4.919159	5.36712	5.98153
212720_at	P51003	UNIPROT	8.496595	6.220731	6.209975	6.353138	5.895935
201892_s_at	P12268	UNIPROT	10.028892	9.985639	10.264938	10.153904	9.763711
208660_at	O75390	UNIPROT	9.790018	9.660169	9.79496	9.819063	9.404086
35201_at	P14866	UNIPROT	10.061688	10.144348	10.069165	10.243439	9.763443
203888_at	P07204	UNIPROT	5.780356	5.610452	5.988294	5.685231	6.186119
208478_s_at	Q07812	UNIPROT	6.989349	6.697286	7.343625	7.186162	6.794185
202189_x_at	P26599	UNIPROT	10.521021	10.353481	10.261299	10.698409	10.142175

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
202112_at	P04275	UNIPROT	4.798375	4.986948	4.779835	4.47295	5.109824
209731_at	P78549	UNIPROT	5.981263	6.067306	6.227268	6.589095	6.25164
219105_x_at	Q9Y5N6	UNIPROT	7.754331	7.183234	7.612262	7.504585	6.305543
203728_at	Q16611	UNIPROT	7.907341	7.635144	7.699747	7.620592	7.164211
207181_s_at	P55210	UNIPROT	6.523759	5.3099	6.208777	5.729434	4.580843
206068_s_at	P28330	UNIPROT	4.398566	5.076109	4.573725	4.415337	4.892217
212330_at	Q14186	UNIPROT	8.575978	7.954031	7.585932	7.689139	7.526
208694_at	P78527	UNIPROT	8.477142	6.79003	7.321142	6.943885	5.320879
211540_s_at	P06400	UNIPROT	6.259771	5.570853	5.730026	5.66017	6.428681
200619_at	Q13435	UNIPROT	9.278084	9.080628	9.43743	9.594238	8.966424
212039_x_at	P39023	UNIPROT	12.588327	12.445318	12.529977	12.484695	12.415998
200023_s_at	O00303	UNIPROT	10.377248	9.902753	9.990862	10.248412	9.513486
201018_at	P47813	UNIPROT	8.419296	6.901609	7.29701	7.567537	6.050494
206613_s_at	Q15573	UNIPROT	6.313745	5.124148	4.961074	4.990845	5.123553
202414_at	P28715	UNIPROT	6.238328	5.891503	5.39643	6.134637	5.145528
213324_at	P12931-1	UNIPROT	7.768807	7.660781	7.55338	7.534435	6.609982
217801_at	P56381	UNIPROT	9.967648	9.429792	9.711437	9.541282	8.659686
202355_s_at	P35269	UNIPROT	7.359196	7.206726	7.01754	7.311206	7.023906
204023_at	P35249	UNIPROT	8.963645	7.606177	8.259862	8.321365	7.052645
206052_s_at	Q14493	UNIPROT	9.361207	7.455887	7.946126	8.294354	7.05497
35671_at	Q12789	UNIPROT	8.396392	8.31421	8.511041	8.516516	8.7416
204227_s_at	O00142	UNIPROT	6.262596	6.627174	6.453705	6.651907	6.244783
208066_s_at	Q00403	UNIPROT	7.985655	6.577656	7.009234	7.261227	6.747629
216958_s_at	P26440	UNIPROT	6.907757	6.535773	6.536434	6.60806	6.064472
209185_s_at	Q9Y4H2	UNIPROT	6.365362	5.797411	6.003795	5.735914	5.517382
202692_s_at	P17480	UNIPROT	7.016065	7.21599	7.027344	7.307422	7.016156
200763_s_at	P05386	UNIPROT	12.29853	12.196243	12.409692	12.383461	12.238283
216442_x_at	P02751	UNIPROT	4.929961	5.333432	4.902361	5.286204	4.44896
203033_x_at	P07954	UNIPROT	9.021241	9.248695	9.169472	9.272072	8.89496
206390_x_at	P02776	UNIPROT	6.986324	7.379403	6.999011	7.179703	6.96889
219380_x_at	Q9Y253	UNIPROT	3.051887	4.437029	3.659206	3.467645	3.881158
209540_at	P05019	UNIPROT	4.163466	4.146825	4.172555	4.127929	4.622501
212378_at	P22102	UNIPROT	7.896507	7.042647	7.092032	7.357153	6.625945
207158_at	P41238	UNIPROT	4.734948	5.302103	4.993654	4.891687	5.306877
200909_s_at	P05387	UNIPROT	12.106321	12.169443	12.161182	12.179997	11.992884
207992_s_at	Q01432	UNIPROT	5.969341	6.548871	6.377255	6.812564	6.564692
200912_s_at	Q14240	UNIPROT	10.472565	10.013663	10.538056	10.149099	9.669395
201055_s_at	Q13151	UNIPROT	7.178774	8.443836	8.566161	8.264485	8.2245
213175_s_at	P14678	UNIPROT	11.56822	11.652597	11.677375	11.753917	11.39675

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
206065_s_at	Q14117	UNIPROT	4.893488	5.2202	5.736971	5.014811	5.113464
203500_at	Q92947	UNIPROT	7.088529	7.40637	7.113412	7.224029	7.318812
202615_at	P50148	UNIPROT	8.036469	6.483094	7.169148	6.949429	6.18271
203926_x_at	P30049	UNIPROT	7.418056	7.804923	7.825775	8.053554	7.811796
201853_s_at	P30305	UNIPROT	7.661163	7.483095	7.329913	7.598551	7.600092
201067_at	P35998	UNIPROT	8.254658	7.955338	7.91645	7.224132	6.85742
211804_s_at	P24941	UNIPROT	8.4964	7.61933	7.540665	7.990293	7.937209
214042_s_at	P35268	UNIPROT	9.680991	9.626122	9.692138	9.510075	8.627332
204276_at	O00142	UNIPROT	4.952763	4.85612	5.211376	5.137199	5.262539
205355_at	P45954	UNIPROT	3.886503	3.591398	3.559329	4.006158	3.682293
201154_x_at	P36578	UNIPROT	12.564966	12.556703	12.606506	12.539504	12.513578
211922_s_at	P04040	UNIPROT	6.794357	6.141392	6.545569	6.17279	6.314693
206795_at	O00254	UNIPROT	4.179211	4.073892	4.295362	4.080569	4.148873
205647_at	P43351	UNIPROT	5.452615	5.306047	4.984164	5.160743	4.691667
218387_s_at	O95336	UNIPROT	6.75365	6.276602	6.536764	6.343221	6.214671
205075_at	P08697	UNIPROT	5.524686	5.779569	6.262383	5.75051	6.153624
202818_s_at	Q14241	UNIPROT	6.93481	7.163489	7.029314	7.230177	7.141476
212533_at	P30291	UNIPROT	8.358839	6.385384	6.663542	6.731612	6.354045
212046_x_at	P27361-3	UNIPROT	7.692246	8.214217	7.808325	7.799762	8.396989
204626_s_at	P05106	UNIPROT	5.835221	6.150566	6.232703	6.025959	5.98728
202753_at	Q15008	UNIPROT	10.440021	9.983591	10.133851	10.126984	9.713953
204483_at	P13929	UNIPROT	6.272889	6.363987	6.621634	6.262359	7.448299
204031_s_at	Q15366	UNIPROT	10.224541	10.310074	10.385954	10.567052	10.061555
210983_s_at	P33993	UNIPROT	9.937443	9.725106	9.701735	9.873017	9.366922
201019_s_at	P47813	UNIPROT	9.741825	8.382146	8.746769	8.811338	7.146364
203157_s_at	O94925	UNIPROT	6.072067	6.17781	6.012034	5.563651	5.941002
207348_s_at	P49916	UNIPROT	6.795866	6.774841	6.917801	7.028385	7.217295
204104_at	Q13487	UNIPROT	7.078755	8.359164	8.243768	8.223978	7.986582
213453_x_at	P04406	UNIPROT	12.894425	12.594558	12.633815	12.772521	12.655948
201755_at	P33992	UNIPROT	7.714576	7.319302	7.619516	7.76269	7.503534
205321_at	P41091	UNIPROT	10.631229	10.313012	10.464127	10.502849	9.285352
215210_s_at	P36957	UNIPROT	8.593653	8.320925	8.53376	8.312159	8.214753
204862_s_at	Q13232	UNIPROT	7.252247	7.588877	7.643921	7.593584	7.572399
221588_x_at	Q02252	UNIPROT	4.989604	4.554272	4.901309	4.292401	5.328882
201274_at	P28066	UNIPROT	10.029817	9.523092	9.958378	9.996735	9.474645
204859_s_at	O14727	UNIPROT	4.681593	4.055483	4.286886	4.482459	4.049316
211138_s_at	O15229	UNIPROT	5.147817	5.003034	5.091809	5.050591	5.134513
206709_x_at	P24298	UNIPROT	6.641133	7.290542	6.804578	6.77294	7.310596
208393_s_at	Q92878	UNIPROT	6.315771	6.195545	6.012899	5.576944	6.116869

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
214167_s_at	P05388	UNIPROT	11.626529	11.584125	11.743811	11.608152	11.484374
210149_s_at	O75947	UNIPROT	10.436467	9.962728	10.066705	10.006297	9.651551
218258_at	Q9Y2S0	UNIPROT	9.707676	9.622614	9.800116	9.461273	8.843644
209375_at	Q01831	UNIPROT	7.810209	7.998454	8.173636	7.992593	8.500208
209294_x_at	O14763	UNIPROT	8.40281	8.466298	8.810589	8.61422	8.31002
217294_s_at	P06733	UNIPROT	11.773543	11.520455	11.680047	11.600541	11.330111
221263_s_at	Q9BWJ5	UNIPROT	10.32446	9.780247	10.058195	10.05263	9.552664
202588_at	P00568	UNIPROT	7.011504	7.231113	6.951055	7.14107	7.173208
200790_at	P11926	UNIPROT	11.623198	11.51393	11.619495	11.757585	11.477291
206493_at	P08514	UNIPROT	6.316216	7.254847	7.087071	7.067594	7.267119
201742_x_at	Q07955	UNIPROT	11.187686	10.148419	10.158106	10.327676	9.705472
203938_s_at	Q15572	UNIPROT	7.297567	7.605499	7.249733	7.379877	7.659944
204780_s_at	P25445	UNIPROT	7.976328	7.601913	7.805338	7.594462	6.899359
200717_x_at	P18124	UNIPROT	13.118915	13.051355	12.97638	12.92233	13.028441
202461_at	P49770	UNIPROT	8.415177	8.18613	8.208542	8.073812	8.174693
201231_s_at	P06733	UNIPROT	12.152119	11.979027	12.083862	12.066412	11.870158
207544_s_at	P28332	UNIPROT	4.451425	4.866896	4.72458	4.901035	5.262426
203418_at	P20248	UNIPROT	8.424717	7.688618	7.921303	7.876114	6.864217
207810_at	P05160	UNIPROT	3.624769	3.508536	3.54807	3.573191	4.108564
201477_s_at	P23921	UNIPROT	8.967371	8.436101	9.00236	8.554618	7.676992
221726_at	P35268	UNIPROT	10.092461	9.706132	9.815296	9.732527	9.142965
203576_at	O15382	UNIPROT	8.602316	8.512105	8.497631	8.558491	8.645987
204704_s_at	P05062	UNIPROT	2.876563	3.095392	3.456648	3.100283	3.226441
210477_x_at	P45983	UNIPROT	6.915816	6.926251	7.170198	6.764844	7.200115
204613_at	P16885	UNIPROT	6.521197	5.778851	6.196617	6.31931	6.121129
201158_at	P30419	UNIPROT	7.250496	7.087612	6.70385	7.099004	6.283792
201127_s_at	P53396	UNIPROT	8.55848	8.695215	9.047193	8.867749	7.645967
217420_s_at	P24928	UNIPROT	3.764808	4.061793	4.148815	3.891099	4.961164
210963_s_at	O15488	UNIPROT	5.520804	5.443812	5.303948	5.545969	5.791154
218096_at	Q9NUQ2	UNIPROT	8.627114	6.903664	7.526059	7.684349	6.291012
202243_s_at	P28070	UNIPROT	10.435428	10.882472	10.16076	9.979693	9.607565
201529_s_at	P27694	UNIPROT	9.152645	8.14368	8.500051	8.559179	7.78592
216226_at	Q92750	UNIPROT	5.980979	5.359913	5.716199	5.681029	4.707325
217718_s_at	P31946	UNIPROT	10.84786	10.457629	10.424423	10.409242	9.531623
200834_s_at	P63220	UNIPROT	12.151812	12.201485	12.330436	12.313852	12.128307
207805_s_at	O00233	UNIPROT	9.031744	8.375868	8.565546	8.868521	8.049419
208795_s_at	P33993	UNIPROT	9.536666	9.102987	9.288439	9.14053	8.948186
208692_at	P23396	UNIPROT	12.500821	12.372993	12.472818	12.472729	12.362904
208929_x_at	P26373	UNIPROT	12.136075	12.115362	12.207654	12.195576	12.119886

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
202587_s_at	P00568	UNIPROT	9.124335	8.682749	8.994179	8.904822	8.483188
211426_x_at	P50148	UNIPROT	6.934631	6.286301	6.772058	6.733487	6.648666
201376_s_at	P52597	UNIPROT	8.554428	8.511545	8.652693	8.682369	7.734783
200594_x_at	Q00839	UNIPROT	11.057244	10.332014	10.219037	10.505096	9.985802
222036_s_at	P33991	UNIPROT	9.822561	7.59634	8.127109	8.102005	7.017551
207389_at	P07359	UNIPROT	5.999475	6.15686	6.148991	6.093033	7.130283
211710_x_at	P36578	UNIPROT	12.582953	12.645515	12.684904	12.700692	12.55132
209162_s_at	O43172	UNIPROT	9.372939	8.567435	8.948453	8.827087	8.290529
221669_s_at	Q9UKU7	UNIPROT	6.9424	5.612501	6.023926	6.358028	5.482778
205053_at	P49642	UNIPROT	8.013657	7.78247	8.240428	7.809528	7.283041
211609_x_at	P55036	UNIPROT	9.786638	9.700502	9.817319	9.675371	9.265654
205658_s_at	Q5SXM2	UNIPROT	7.417628	7.420598	7.921303	7.458723	7.371884
208765_s_at	O43390	UNIPROT	9.180084	9.132763	9.373731	9.356622	8.799075
211357_s_at	P05062	UNIPROT	4.48743	5.648383	5.040384	4.978818	5.079056
200986_at	P05155	UNIPROT	4.169192	5.166758	4.671264	4.45876	5.444096
200055_at	Q12962	UNIPROT	9.07401	9.222119	9.199404	9.139204	8.863206
200648_s_at	P15104	UNIPROT	8.034924	7.221011	7.436279	7.335784	6.715836
211888_x_at	Q92851	UNIPROT	6.328792	6.579473	6.484649	6.228249	6.146816
207999_s_at	P78563	UNIPROT	6.304793	6.822769	6.24221	6.432142	7.350091
209178_at	Q92620	UNIPROT	7.526065	8.007129	8.164632	7.779044	8.243764
203566_s_at	P35573	UNIPROT	7.461391	4.685879	5.003052	5.341686	5.028823
203939_at	P21589	UNIPROT	3.227989	3.562177	3.447584	3.471777	3.507668
211938_at	P23588	UNIPROT	9.617639	9.371786	9.172511	9.467607	9.170177
205292_s_at	P22626	UNIPROT	10.635031	10.479843	10.596719	10.583553	9.802364
209542_x_at	P05019	UNIPROT	5.991458	6.049216	6.079565	6.027242	6.325891
209529_at	O43688	UNIPROT	7.561469	7.159427	7.060177	7.283961	6.634269
209463_s_at	Q16514	UNIPROT	7.593807	6.540534	6.754255	7.140536	6.497817
208536_s_at	O43521	UNIPROT	4.46653	4.687327	4.60407	5.055259	6.031873
209433_s_at	Q06203	UNIPROT	8.216408	6.94696	7.3209	7.111298	6.379896
208688_x_at	P55884	UNIPROT	9.826025	9.500332	9.757275	9.874133	9.843485
202499_s_at	P11169	UNIPROT	5.59512	4.974858	4.889228	5.088668	5.036275
202996_at	Q9HCU8	UNIPROT	7.205911	7.607374	7.355515	7.302045	8.371588
208746_x_at	O75964	UNIPROT	11.030676	10.886604	10.935355	10.89228	10.731808
205756_s_at	P00451	UNIPROT	5.866348	5.09699	5.403969	5.535917	4.676193
209085_x_at	P35251	UNIPROT	7.374687	6.972569	6.921936	6.867061	6.418695
221761_at	P30520	UNIPROT	8.085093	6.425963	6.938143	7.254096	5.757423
210028_s_at	Q9UBD5	UNIPROT	6.70193	6.022511	6.073867	6.294331	5.675801
40465_at	Q9BUQ8	UNIPROT	7.574984	6.534018	6.858768	6.760118	6.633045
204277_s_at	O00142	UNIPROT	6.677529	7.137898	7.198396	6.919618	7.916624

Identifiers	mapsTo	Resource	10h_control	10h	14h	18h	24h
212826_s_at	P12236	UNIPROT	11.296616	11.432634	11.552398	11.695771	11.199195
200814_at	Q06323	UNIPROT	9.80782	9.37717	9.75135	9.387731	8.994738
209507_at	P35244	UNIPROT	8.078364	7.953634	8.269938	7.660127	7.363039
203462_x_at	P55884	UNIPROT	9.57696	9.190375	9.429654	9.520592	8.96422
212218_s_at	P49327	UNIPROT	8.664305	8.741615	8.434342	8.846307	8.642844
207851_s_at	P06213	UNIPROT	5.49705	6.537015	6.635764	6.426451	6.268386
204510_at	O00311	UNIPROT	7.282204	5.851107	5.919738	5.911992	5.343857
200000_s_at	Q6P2Q9	UNIPROT	9.381569	9.710802	9.874874	9.934639	9.495911
206055_s_at	P09661	UNIPROT	9.022367	7.852716	8.03544	7.955042	7.095769
211814_s_at	O96020	UNIPROT	8.080041	6.418495	6.430757	6.45542	5.308202
202858_at	Q01081	UNIPROT	10.387472	10.653645	10.634477	10.50696	10.018321
201313_at	P09104	UNIPROT	7.780428	7.254847	7.608128	7.53747	7.66428
214141_x_at	Q16629	UNIPROT	10.462665	9.964584	10.42432	10.386704	9.704077
200952_s_at	P30279	UNIPROT	8.337801	7.110314	7.340873	7.149843	6.881352
200073_s_at	Q14103-4, Q14103-3	UNIPROT	10.187198	9.39046	9.547218	9.403993	8.502351
211720_x_at	P05388	UNIPROT	13.339498	13.033119	13.109506	13.207351	13.043187
208863_s_at	Q07955	UNIPROT	9.409365	9.48625	9.730593	9.598869	9.004462
211121_s_at	Q99704	UNIPROT	7.294306	7.058304	7.000485	7.026361	7.68167
217006_x_at	P49327	UNIPROT	5.241079	6.45416	6.287923	6.473345	6.928414
209355_s_at	O14495	UNIPROT	4.593979	4.776449	4.658769	4.470941	4.53923
204252_at	P24941	UNIPROT	9.188075	8.234579	8.268963	8.370891	7.960322
215001_s_at	P15104	UNIPROT	9.104724	7.113356	7.63082	7.675146	6.934851
202451_at	P32780	UNIPROT	8.303954	6.738435	7.414878	7.099654	5.947617
217167_x_at	P32189	UNIPROT	5.822109	5.836285	6.042669	6.53113	5.998453
203968_s_at	Q99741	UNIPROT	7.726235	6.656869	6.603618	6.711893	5.476273
201930_at	Q14566	UNIPROT	10.06938	9.298393	9.081557	9.156729	8.411054
200593_s_at	Q00839	UNIPROT	10.15048	10.046418	10.185244	10.276272	9.879428

4. Identifiers was not found.

Identifiers	10h_control	10h	14h	18h	24h
222107_x_at	6.212921	6.817279	7.112732	6.223009	7.357428
216505_x_at	9.091026	9.046847	9.125981	9.044583	8.880218
220607_x_at	9.481187	9.230083	9.018075	8.991888	8.324324
222286_at	3.823994	3.804293	3.65824	3.814268	3.501542
201741_x_at	5.61017	5.987601	6.079029	5.683744	5.522801
215963_x_at	12.181784	12.248077	12.284171	12.325854	12.28888
217364_x_at	5.135855	5.045896	5.002885	4.687876	5.266594
222078_at	5.198771	5.590589	5.268068	5.472571	5.823982

Identifiers	10h_control	10h	14h	18h	24h
220113_x_at	6.779274	7.079246	7.385343	6.912735	6.884345
208713_at	7.891948	7.802858	7.189686	7.684458	7.059539
207221_at	5.056393	5.239778	5.073275	4.920557	5.311567
202725_at	6.45355	6.218929	6.222952	6.511286	6.774803
206537_at	4.575609	4.521813	4.513051	4.48975	4.430067
221719_s_at	4.579828	5.162755	5.332887	5.129762	5.75642
210035_s_at	3.302917	3.590954	3.21092	3.329634	3.804907
213734_at	6.309985	4.955416	4.800237	5.332496	4.851279
213813_x_at	6.143036	7.903587	6.789343	6.457461	6.433148
221721_s_at	4.169672	4.411458	5.111109	4.095696	5.145318
214261_s_at	5.57424	5.888137	5.787391	5.826738	6.430251
204627_s_at	4.327253	4.126847	4.291706	4.292401	3.625357
216282_x_at	6.065661	5.552582	5.541471	5.766693	6.821658
218797_s_at	7.250205	7.240552	7.498329	7.532709	6.950147
216762_at	4.787684	4.744511	4.917088	4.739478	5.597425
214351_x_at	11.950218	12.03641	12.107817	12.142658	12.012476
215695_s_at	4.258246	5.79244	5.730026	5.721925	5.783317
221722_x_at	4.601165	5.364778	5.367704	4.964971	5.916632
210021_s_at	7.06838	6.660632	6.800874	6.759586	6.696107
213653_at	5.602523	5.599183	5.781172	5.796688	5.245591
214309_s_at	5.957879	6.517297	6.276295	6.284123	7.180097
220934_s_at	7.085312	7.159427	7.187582	7.105658	6.383415
214097_at	8.065717	8.064439	8.207947	8.202918	7.822889
207335_x_at	8.322238	8.119143	8.152832	8.278998	7.390664
213121_at	5.115234	6.501346	6.592157	5.941659	7.036349
214377_s_at	5.538141	6.041681	6.183619	5.826738	6.204506
200708_at	10.266277	9.774548	10.001105	9.869204	9.576961