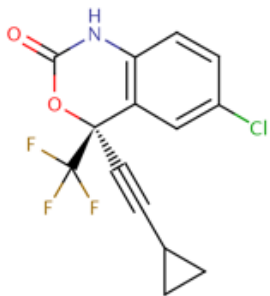


Showing drug card for Efavirenz (DB00625)

Legend: drug field target field enzyme field

Version	2.5
Creation Date	2005-06-13 13:24:05
Update Date	2009-06-23 18:08:02
Primary Accession Number	DB00625
Secondary Accession Number	<ul style="list-style-type: none"> • APRD00059
Name	Efavirenz
Drug Type	<ul style="list-style-type: none"> • Approved • Investigational • Small Molecule
Description	Efavirenz (brand names Sustiva [®] and Stocrin [®]) is a non-nucleoside reverse transcriptase inhibitor (NNRTI) and is used as part of highly active antiretroviral therapy (HAART) for the treatment of a human immunodeficiency virus (HIV) type 1. For HIV infection that has not previously been treated, efavirenz and lamivudine in combination with zidovudine or tenofovir is the preferred NNRTI-based regimen. Efavirenz is also used in combination with other antiretroviral agents as part of an expanded postexposure prophylaxis regimen to prevent HIV transmission for those exposed to materials associated with a high risk for HIV transmission.
Synonyms	<ol style="list-style-type: none"> 1. EFV 2. efavirenz
Brand Names	<ol style="list-style-type: none"> 1. Stocrin 2. Sustiva
Brand Mixtures	Not Available
Chemical IUPAC Name	(4S)-6-chloro-4-(2-cyclopropylethynyl)-4-(trifluoromethyl)-1H-3,1-benzoxazin-2-one
Chemical Formula	C ₁₄ H ₉ ClF ₃ NO ₂
Chemical Structure	 <p>The image shows the chemical structure of Efavirenz. It features a benzoxazin-2-one core. At the 4-position of the benzoxazin ring, there is a chlorine atom (Cl) and a 2-cyclopropylethynyl group. At the 6-position, there is a trifluoromethyl group (CF₃). The structure is drawn with stereochemistry: the trifluoromethyl group is on a wedge, and the cyclopropylethynyl group is on a dash.</p>
CAS Registry Number	154598-52-4
InChI Identifier	InChI=1/C14H9ClF3NO2/c15-9-3-4-11-10(7-9)13(14(16,17)18,21-12(20)19-11)6-5-8-1-2-8/h3-4,7-8H,1-2H2,(H,19,20)/t13-/m0/s1/f/h19H
InChI Key	XPOQHMRABVBWPR-VKDSSWMGDD
KEGG Drug	D00896
KEGG Compound	C08088
PubChem Compound	64139
PubChem Substance	206181

ChEBI ID	Not Available
PharmGKB ID	PA449441
HET ID	Not Available
GenBank ID	Not Available
Drug ID Number [DIN]	02246045
RxList Link	http://www.rxlist.com/cgi/generic/efaviren.htm
PDRhealth Link	Not Available
Wikipedia Link	http://en.wikipedia.org/wiki/Efavirenz
FDA Label	<ul style="list-style-type: none"> Show PDF (issued on 1998-09-01) Show PDF (issued on 2002-02-01)
Material Safety Data Sheet (MSDS)	<ul style="list-style-type: none"> Show PDF
Synthesis Reference	Not Available
Average Molecular Weight	315.6750
Monoisotopic Molecular Weight	315.0274
State	Solid
Melting Point	139-141 oC
Experimental Water Solubility	Not Available Source: PhysProp
Predicted Water Solubility	8.55e-03 mg/mL Calculated using ALOGPS
Experimental LogP/Hydrophobicity	4.6 Source: PhysProp
Predicted LogP	3.89 Calculated using ALOGPS
Experimental LogS	Not Available
Predicted LogS	-4.57 Calculated using ALOGPS
Experimental Caco2 Permeability	Not Available
pKa/Isoelectric Point	Not Available
Mass Spectrum	Not Available
MOL File	Show Download
SDF File	Show Download
PDB File	Show Download
2D Structure	View 2D Structure
3D Structure	View 3D Structure
Experimental PDB ID	Not Available
Isomeric SMILES	<chem>FC(F)(F)[C@]1(OC(=O)NC2=C1C=C(Cl)C=C2)C#CC1CC1</chem>
Canonical SMILES	<chem>FC(F)(F)C1(OC(=O)NC2=C1C=C(Cl)C=C2)C#CC1CC1</chem>
Drug Category	<ul style="list-style-type: none"> Anti-HIV Agents Nonnucleoside Reverse Transcriptase Inhibitors Reverse Transcriptase Inhibitors
ATC Codes	<ul style="list-style-type: none"> J05AG03
AHFS Codes	<ul style="list-style-type: none"> 08:18.08.16

Indication	For use in combination treatment of HIV infection (AIDS)																																															
Pharmacology	Efavirenz (dideoxyinosine, ddI) is an oral nucleoside reverse transcriptase inhibitor (NRTI). It is a synthetic purine derivative and, similar to zidovudine, zalcitabine, and stavudine. Efavirenz was originally approved specifically for the treatment of HIV infections in patients who failed therapy with zidovudine. Currently, the CDC recommends that Efavirenz be given as part of a three-drug regimen that includes another nucleoside reverse transcriptase inhibitor (e.g., lamivudine, stavudine, zidovudine) and a protease inhibitor or efavirenz when treating HIV infection.																																															
Mechanism of Action	Similar to zidovudine, efavirenz inhibits the activity of viral RNA-directed DNA polymerase (i.e., reverse transcriptase). Antiviral activity of efavirenz is dependent on intracellular conversion to the active triphosphorylated form. The rate of efavirenz phosphorylation varies, depending on cell type. It is believed that inhibition of reverse transcriptase interferes with the generation of DNA copies of viral RNA, which, in turn, are necessary for synthesis of new virions. Intracellular enzymes subsequently eliminate the HIV particle that previously had been uncoated, and left unprotected, during entry into the host cell. Thus, reverse transcriptase inhibitors are virustatic and do not eliminate HIV from the body. Even though human DNA polymerase is less susceptible to the pharmacologic effects of triphosphorylated efavirenz, this action may nevertheless account for some of the drug's toxicity.																																															
Absorption	Not Available																																															
Toxicity	Not Available																																															
Protein Binding	99.5-99.75%																																															
Biotransformation	Efavirenz is principally metabolized by the cytochrome P450 system to hydroxylated metabolites with subsequent glucuronidation of these hydroxylated metabolites. These metabolites are essentially inactive against HIV-1.																																															
Half Life	40-55 hours																																															
Dosage Forms	<table border="1"> <thead> <tr> <th>Form</th> <th>Route</th> </tr> </thead> <tbody> <tr> <td>Capsule</td> <td>Oral</td> </tr> <tr> <td>Tablet</td> <td>Oral</td> </tr> </tbody> </table>		Form	Route	Capsule	Oral	Tablet	Oral																																								
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Tablet	Oral																																															
Patient Information	Show																																															
Contraindications	Show																																															
Interactions	Show																																															
Drug Interactions	<table border="1"> <thead> <tr> <th>Drug</th> <th>Interaction</th> </tr> </thead> <tbody> <tr> <td>Alprazolam</td> <td>The antiviral agent increases the effect and toxicity of benzodiazepine</td> </tr> <tr> <td>Astemizole</td> <td>Increased risk of cardiotoxicity and arrhythmias</td> </tr> <tr> <td>Atazanavir</td> <td>Efavirenz decreases the levels/effects of atazanavir</td> </tr> <tr> <td>Atorvastatin</td> <td>The NNRT inhibitor increases the effect and toxicity of the statin</td> </tr> <tr> <td>Cisapride</td> <td>Increased risk of cardiotoxicity and arrhythmias</td> </tr> <tr> <td>Clarithromycin</td> <td>Efavirenz decreases levels of clarithromycin</td> </tr> <tr> <td>Cyclosporine</td> <td>Efavirenz decreases the levels of cyclosporine</td> </tr> <tr> <td>Dihydroergotamine</td> <td>The antiretroviral agent may increase the ergot derivative toxicity</td> </tr> <tr> <td>Dihydroergotoxine</td> <td>The antiretroviral agent may increase the ergot derivative toxicity</td> </tr> <tr> <td>Ergotamine</td> <td>The antiretroviral agent may increase the ergot derivative toxicity</td> </tr> <tr> <td>Indinavir</td> <td>Efavirenz decreases the effect of indinavir</td> </tr> <tr> <td>Lovastatin</td> <td>The NNRT inhibitor increases the effect and toxicity of the statin</td> </tr> <tr> <td>Methadone</td> <td>The antiretroviral agent decreases the effect of mathadone</td> </tr> <tr> <td>Methylergonovine</td> <td>The antiretroviral agent may increase the ergot derivative toxicity</td> </tr> <tr> <td>Methysergide</td> <td>The antiretroviral agent may increase the ergot derivative toxicity</td> </tr> <tr> <td>Midazolam</td> <td>The antiviral agent increases the effect and toxicity of benzodiazepine</td> </tr> <tr> <td>Saquinavir</td> <td>Efavirenz decreases the effect of saquinavir</td> </tr> <tr> <td>Simvastatin</td> <td>The NNRT inhibitor increases the effect and toxicity of the statin</td> </tr> <tr> <td>St. John's Wort</td> <td>St. John's Wort decreases the antiretroviral effect</td> </tr> <tr> <td>Terfenadine</td> <td>Increased risk of cardiotoxicity and arrhythmias</td> </tr> <tr> <td>Triazolam</td> <td>The antiviral agent increases the effect and toxicity of benzodiazepine</td> </tr> <tr> <td>Voriconazole</td> <td>Efavirenz decreases the levels/effect of voriconazole</td> </tr> </tbody> </table>		Drug	Interaction	Alprazolam	The antiviral agent increases the effect and toxicity of benzodiazepine	Astemizole	Increased risk of cardiotoxicity and arrhythmias	Atazanavir	Efavirenz decreases the levels/effects of atazanavir	Atorvastatin	The NNRT inhibitor increases the effect and toxicity of the statin	Cisapride	Increased risk of cardiotoxicity and arrhythmias	Clarithromycin	Efavirenz decreases levels of clarithromycin	Cyclosporine	Efavirenz decreases the levels of cyclosporine	Dihydroergotamine	The antiretroviral agent may increase the ergot derivative toxicity	Dihydroergotoxine	The antiretroviral agent may increase the ergot derivative toxicity	Ergotamine	The antiretroviral agent may increase the ergot derivative toxicity	Indinavir	Efavirenz decreases the effect of indinavir	Lovastatin	The NNRT inhibitor increases the effect and toxicity of the statin	Methadone	The antiretroviral agent decreases the effect of mathadone	Methylergonovine	The antiretroviral agent may increase the ergot derivative toxicity	Methysergide	The antiretroviral agent may increase the ergot derivative toxicity	Midazolam	The antiviral agent increases the effect and toxicity of benzodiazepine	Saquinavir	Efavirenz decreases the effect of saquinavir	Simvastatin	The NNRT inhibitor increases the effect and toxicity of the statin	St. John's Wort	St. John's Wort decreases the antiretroviral effect	Terfenadine	Increased risk of cardiotoxicity and arrhythmias	Triazolam	The antiviral agent increases the effect and toxicity of benzodiazepine	Voriconazole	Efavirenz decreases the levels/effect of voriconazole
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Food Interactions	<ul style="list-style-type: none"> • Avoid excessive or chronic alcohol consumption. • Take without regard to meals. 																																															
Pathways	Not Available																																															

General References	<ol style="list-style-type: none"> 1. Ren J, Bird LE, Chamberlain PP, Stewart-Jones GB, Stuart DI, Stammers DK: Structure of HIV-2 reverse transcriptase at 2.35-Å resolution and the mechanism of resistance to non-nucleoside inhibitors. Proc Natl Acad Sci U S A. 2002 Oct 29;99(22):14410-5. Epub 2002 Oct 17. [PubMed] 2. Drugs.com 3. Wikipedia 4. RxList
Organisms Affected	<ul style="list-style-type: none"> • Human Immunodeficiency Virus
Phase 1 Metabolizing Enzymes	<ol style="list-style-type: none"> 1. Cytochrome P450 2C19 (CYP2C19) 2. Cytochrome P450 3A4 (CYP3A4) 3. Cytochrome P450 2B6 (CYP2B6)
Targets	<ol style="list-style-type: none"> 1. Gag-Pol polyprotein

Phase 1 Metabolizing Enzyme 1 [\[top\]](#)

Enzyme 1 Name	Cytochrome P450 2C19 (CYP2C19)
Enzyme 1 Gene Name	CYP2C19
Enzyme 1 SwissProt ID	P33261
Enzyme 1 SNPs	SNPJam Report
Enzyme 1 Protein Sequence	<pre>>sp P33261 CP2CJ_HUMAN Cytochrome P450 2C19 (EC 1.14.13.80) MDPFVVLVLCSCLLLSIWRQSSGRGKLP GPPTPLPVI GNILQIDIKDVS KSLTNLSKI YGPVFTLYFGLERMVVLHGVEVVK EALIDLGE EFSGRGHFPLAERANR GFGIVFSNGKRW KEIRRFSLMTLRNFMGKRSIEDRVQEEARCLVEELRKTASPCDPTFILGCAPCNVICS IIFQKRFDYKQQFLNLMEKLNENIRIVSTPWIQICNNFPTIIDYFPFGTHNKLKLNLFM ESDILEKVKEHQESMDINNPRDFIDCFLIKMEKEKQOQSEFTIENLVITAADLLGAGTE TTSTTLRYALLLLKHPEVTAKVQEEIERVVGRNRSPCMQDRGHMPYTDAAVVEHVQRYID LIPTSLPHAVTCDVKFRNYLIPKGT TILTSLSV LHDNKEFPNPEMFDPRHFLEGGNFK KSNYFMPFSAGKRICVGEGLARME LFLFTF ILQNFNLKSLIDPKDLDTTPV VNGFASVP PFYQLCFIPV</pre>

Phase 1 Metabolizing Enzyme 2 [\[top\]](#)

Enzyme 2 Name	Cytochrome P450 3A4 (CYP3A4)
Enzyme 2 Gene Name	CYP3A4
Enzyme 2 SwissProt ID	P08684
Enzyme 2 SNPs	SNPJam Report
Enzyme 2 Protein Sequence	<pre>>sp P08684 CP3A4_HUMAN Cytochrome P450 3A4 (EC 1.14.13.67) ALIPDLAMETWLLAVSLVLLYLYGTHSHGLFKKLGIPGPTPLPFLGNILSYHKGF CMFD MECHKYKGVWGFYDQQVLAITD PDMIKTVLVKECYSVFTNRRRPFPGVGF MKSAISIA EDEEWKRLRSLSPFTTSGKLEKEMVPIIAQYGDVLRNLRREAETGKPVTLKDVFGAYSM DVI TSTSFVGNIDSLNPNQDPFVENTKLLRFDLDPFFLSITVFPFLIPILEV LNICVF PREVTNFLRKSVKRMKESRLED TQKHRVDFLQMLIDSQNSKETESHKALSDLELVAQSI I FIFAGYETTSSVLSFIMYELATHPDVQKQLQEEIDAVLPNKAPPTYD TVLQMEYLD MVVN ETLRLFP IAMRLERVCKKDVEINGMFI PKGWVVMIPSYALHRDPKYWTEPEKFLPERFSK KNKDNIDPYYITPFGSGPRNCIGMRFALMNMKLALIRVLQNF SFPKCKETQIPLKLSLGG LLQPEKPVVLKVESRDGTVSGA</pre>

Phase 1 Metabolizing Enzyme 3 [\[top\]](#)

Enzyme 3 Name	Cytochrome P450 2B6 (CYP2B6)
Enzyme 3 Gene Name	CYP2B6
Enzyme 3 SwissProt ID	P20813
Enzyme 3 SNPs	SNPJam Report
Enzyme 3 Protein	<pre>>sp P20813 CP2B6_HUMAN Cytochrome P450 2B6 (EC 1.14.14.1) MELSVLLFLALLTGLLLLLVQRHPNTHDR LPPGPRPLPLLG NLLQMDRRGLLKSFLRFRE KYGDVFTVHLGPRPVVMLCGVEAIREALVDKAEAFSGRGKIAMVDPF FRGYGVI FANGNR WKVLRRF SVTMRDFMGKRSVEERIQEEAQCLIEELRKS K GALMDPTFLFQS ITANI IC SIVFGKRFHYQDEFLKMLNLFYQTFSLISSVFGQLFELFSGFLKYFPGAHRQVYKNLQE</pre>

Sequence	INAYIGHSVKHEKRETLDPSPAPKDLIDTYLLHMEKEKSNAHSEFSHQNLNLTLSLFFAGT ETTSTTLRYGFLMLKYPHVAERVYREIEQVIGPHRPPPELHDRAKMPYTEAVIYEIQRFS DLLPMGVPHIVTQHTSFRGYIIPKDETVFLILSTALHDPHYFEKPDFAFNPDHFLDANGAL KKTEAFIPFSLGKRICLGEIARAELFLFFTTILQNFMSASPVAPEDIDLTPQECGVGKI PPTYQIRFLPR
Drug Target 1 [top]	
Target 1 ID	864
Target 1 Name	Gag-Pol polyprotein
Target 1 Synonyms	1. Pr160Gag-Pol
Target 1 Gene Name	gag
Target 1 Protein Sequence	>Gag-Pol polyprotein GARASVLSGGELDKWEKIRLRPGGKKYKCLKHIVWASRELERFAVNPGLLETSEGCRQIL GQLQPSLQTGSEELRSLYNTVATLYCVHQRIDVKDTKEALEKIEEEQNKSKKKAQAAAA AGTGNSSQVSQNYPIVQNLQGMVHQAI SPRTLNAWVKVVEEKAFSPEVIMPSALSSEGA TPQDLNLTMLNTVGGHQAAMQLKETINEEAAEWDVHPVHAGPIAPGQMREPRGSDIAGT TSTLQEQIGWMTNPNPIPVGEIYKRWII LGLNKIVRMYSPTSILDIRQGPKEPFRDYVDR FYKTLRAEQASQDVKNWMTETLLVQNaNPDCCKTILKALGPAATLEEMMTACQVGGPGHK ARVLAEMSQVTNPNANIMMQRGNFRNQRKTKVCFNCGKEGHI AKNCRAPRKKGCWRCGRE GHQMKDCTERQANFLREDLAFLQKAREFSSEQTRANSPTRRELQVWGENNSLSEAGAD RQGTVSFNFPQITLWQRPLVTIRIGGQLKEALLDTGADDTVLEEMNLP GKWKPKMIGGIG GFIKVRQYDQIPVEICGKAIGTVLVGPTPVNI IGRNLLTQIGCTLNFPISPIETVPVKL KPGMDGPKVKQWPLTEEKIKALVEICTEMEKEGKISKIGPENPYNTPVFAIKKDKSTKWR KLVDFRELNKRQDFWEVQLGIPHPAGLKKKSVTVLDVGDAYFSVPLDKDFRKYTAFTI PSINNETPGIRYQYNVLPQGWKSPAI FQSSMTKILEPFRKQNPDI VIYQYMDL YVGS LEIGQHRTKIEELRQHLLRWGFTTPDKKHQKEPPFLWMGYELHPDKWTVQPIMLPEKDSW TVNDIQKLVGKLNWASQIYAGIKVKQLCKLLRGTKALTEVIPLTEEALELAENREILKE PVHEVYDPSKDLVAEIQKQGQWYQIYQEPFKNLKTGKYARMRGAHTNDVKQLTEAV QKVS TESIVIWGKIPKFKLP IQKETWEAWWMEYWQATWIPEWEFVNT PPLVKLWYQLEKE PIVGAETFYVDGAANRETKLGKAGYVTDGRGRQVVS IADTTNQKTELQAIHLALQDSGLE VNIVTDSQYALGIIQAQDPKSESELVSQIIEQLIKKEKVVYLAWVPAHKGIGGNEQVDKLV SAGIRKVLFLNGIDKAQEEHEKYHSNWRAMASDFNLPPVVAKEIVASCDCQLKGEAMHG QVDCSPGIWQLDCTHLEGKII LVAVHVASGYIEAEVIPAETGQETAYFLLKLAGRWPVK IHTDNGSNFTSTTVKAACWWAGIKQEFGIPYNPQSOGVVE SMNNELKII GQVRDQAEHL KTAVQMAVFIHNFKRKGGIGGYSAGERIVDI IATDIQTKELQKQITKIQNFRVYRDNDK PLWKGPAKLLWKGEAVVIQDNSDIKVPPRRKAKIIRDYGKQMGDDCVASRQDED
Target 1 Number of Residues	1459
Target 1 Molecular Weight	161886
Target 1 Theoretical pI	9.02
Target 1 GO Classification	<p>Function</p> <ul style="list-style-type: none"> RNA binding transferase activity transferase activity, transferring phosphorus-containing groups nucleotidyltransferase activity RNA-directed DNA polymerase activity DNA binding hydrolase activity, acting on ester bonds nuclease activity endonuclease activity endoribonuclease activity endoribonuclease activity, producing 5'-phosphomonoesters ribonuclease H activity nucleic acid binding hydrolase activity peptidase activity endopeptidase activity aspartic-type endopeptidase activity structural molecule activity binding ion binding cation binding transition metal ion binding

	<p>zinc ion binding catalytic activity integrase activity</p> <p>Process</p> <p>DNA replication RNA-dependent DNA replication DNA recombination macromolecule metabolism protein metabolism cellular protein metabolism proteolysis physiological process metabolism cellular metabolism nucleobase, nucleoside, nucleotide and nucleic acid metabolism DNA metabolism DNA integration viral life cycle</p> <p>Component</p> <p>Not Available</p>												
Target 1 General Function	Involved in RNA binding												
Target 1 Specific Function	Integrase performs the integration of the newly synthesized dsDNA copy of the viral genome into the host chromosome. The integrated DNA is called provirus												
Target 1 Pathways	<table border="1"> <thead> <tr> <th>Name</th> <th>SMPDB Link</th> <th>KEGG Link</th> </tr> </thead> <tbody> <tr> <td>DNA polymerase</td> <td></td> <td>map03030</td> </tr> <tr> <td>Purine metabolism</td> <td>SMP00050</td> <td>map00230</td> </tr> <tr> <td>Pyrimidine metabolism</td> <td>SMP00046</td> <td>map00240</td> </tr> </tbody> </table>	Name	SMPDB Link	KEGG Link	DNA polymerase		map03030	Purine metabolism	SMP00050	map00230	Pyrimidine metabolism	SMP00046	map00240
Name	SMPDB Link	KEGG Link											
DNA polymerase		map03030											
Purine metabolism	SMP00050	map00230											
Pyrimidine metabolism	SMP00046	map00240											
Target 1 Reactions	<ul style="list-style-type: none"> deoxynucleoside triphosphate + DNAn = diphosphate + DNAn+1 												
Target 1 Pfam Domain Function	<ul style="list-style-type: none"> RnaseH (PF00075) RVP (PF00077) RVT_1 (PF00078) zf-CCHC (PF00098) Gag_p17 (PF00540) Integrase (PF00552) Gag_p24 (PF00607) rve (PF00665) Integrase_Zn (PF02022) RVT_connect (PF06815) RVT_thumb (PF06817) 												
Target 1 Signals	<ul style="list-style-type: none"> None 												
Target 1 Transmembrane Regions	<ul style="list-style-type: none"> None 												
Target 1 Essentiality	Non-Essential												
Target 1 GenBank ID Protein	328661												
Target 1 UniProtKB/Swiss-Prot ID	P03369												
Target 1 UniProtKB/Swiss-Prot Entry Name	POL_HV1A2												
Target 1 PDB ID	1VRU												
Target 1 PDB File	Show												
Target 1 3D Structure	View 3D Structure												
Target 1 Cellular Location	<ul style="list-style-type: none"> Nucleus. Cytoplasm (By similarity). Following virus entry, the nuclear localization signal (NLS) of 												

Target 1 Gene Sequence	<p>>3012 bp</p> <p>TTTTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCCAGGGAATTTTCTTCAGAGCAG ACCAGAGCCAACAGCCCCACCAGAAGAGAGCTTCAGGTTTGGGGAGGAGAAAACAACCTCC CTCTCAGAAGCAGGAGCCGATAGACAAGGAACGTATCCTTAACCTCCCTCAGATCACT CTTTGGCAACGACCCCTCGTCACAATAAGGATAGGGGGGCAACTAAAGGAAGCTCTATTA GATACAGGAGCAGATGATACAGTATTAGAAGAAATGAATTTGCCAGGAAAATGGAAACCA AAAAATGATAGGGGGAATTTGGAGGTTTTATCAAAGTAAGACAGTACGATCAGATACCTGTA GAAATCTGTGGACATAAAGCTATAGGTACAGTATTAGTAGGACCTACACCTGTCAACATA ATTGGAAGAAATCTGTTGACTCAGATTTGGTTGTAATTTAAATTTCCCATTAGTCCTATT GAACTGTACCAGTAAAAATTAAGCCAGGAATGGATGGCCCAAAAGTTAAGCAATGGCCA TTGACAGAAGAAAAATAAAGCATTAGTAGAGATATGTACAGAAATGGAAAAGGAAGGG AAAAATTTCAAAAATTTGGCCTGAAAAATCCATACAATACTCCAGTATTGCTATAAAGAAA AAAGACAGTACTAAATGGAGAAAAC TAGTAGATTTT CAGAGA ACTTAATAAAGAACTCAA GACTTCTGGGAAGTT CAGTTAGGAATACCACACCCCGCAGGGTTAAAAAAGAAAAAATCA GTAACAGTATTGGATGTGGGTGATGCATACCTTTT CAGTTCCCTTAGATAAAGACTTTAGA AAGTATACTGCATTTACCATACTTAGTATAAACAATGAGACACCAGGGATTAGATATCAG TACAATGTGCTGCCACAGGATGGAAGGATCACCAGCAATATTTCCAAAAGTAGCATGACA AAAACTTAGAGCCTTTTAGAAAACAGAATCCAGACATAGTTATCTATCAATACATGGAT GATTTGTATGTAGGATCTGACTTAGAAATAGGGCAGCATAGAACAATAAGAGGAACCTG AGACAGCATCTGTTGAGGTGGGGATTTACCACACCAGACAAAAACATCAGAAAGAACCT CCATTCCTTTGGATGGGTTATGAATCCATCCTGATAAATGGACAGTACAGCCTATAATG CTGCCAGAAAAAGACAGCTGGACTGTCAATGACATACAGAAGTTAGTGGGAAAAATGAAAT TGGGCAAGTCAGATTTATGCAGGGATTAAGTAAAGCAGTTATGTAAACTCCTTAGAGGA ACCAAAGCAGTAAACAGAAGTAATACCATAACAGAAGAAGCAGAGCTAGAACTGGCAGAA AACAGGGAGATTTCAAAGAACCAGTACATGAAGTATAATTATGACCCATCAAAAGACTTA GTAGCAGAAATACAGAAGCAGGGGCAAGGCCAATGGACATATCAAATTTATCAAGAGCCA TTTTAAAAATCTGAAAACAGGAAAGTATGCAAGGATGAGGGGTGCCACATAATGATGTA AAACAGTTAACAGAGGCAGTGCAAAAAGTATCCACAGAAAAGCATAGTAATATGGGGAAAG ATTCCTAAATTTAACTACCCATACAAAAGGAAACATGGGAAGCATGGTGGATGGAGTAT TGGCAAGCTACCTGGATTCCTGAGTGGGAGTTTGTCAATACCCCTCCCTTAGTGAAATTA TGGTACCAGTTAGAGAAAGAACCATAGTAGGAGCAGAACTTTCTATGTAGATGGGGCA GCTAATAGGGGAGACTAAATTAGGAAAAGCAGGATATGTTACTGACAGAGGAAGACAAAAA GTTGTCTCCATAGCTGACACAACAATCAGAAGACTGAATTACAAGCAATTCATCTAGCT TTGCAGGATTCGGGATTAGAAGTAAACATAGTAAACAGACTCACAATATGCATTAGGAATC ATTCAGCACAACCAGATAAGAGTGAATCAGAGTTAGTCAGTCAAATAATAGAGCAGTTA ATAAAAAAGGAAAAGGTTACCTGGCATGGGTACCAGCACACAAGGAATTTGGAGGAAAT GAACAAGTAGATAAATTAGTCAGTGTGGAATCAGGAAAGTACTATTTTTGAATGGAATA GATAAGGCCCAAGAAGAACATGAGAAATATCACAGTAATTTGGAGAGCAATGGCTAGTGAT TTTAACCTGCCACCTGTAGTAGCAAAAAGAAATAGTAGCCAGCTGTGATAAATGTCAGCTA AAAGGAGAAGCCATGCATGGACAAGTAGACTGTAGTCCAGGAATATGGCAACTAGATTGT ACACATCTAGAAGGAAAAATATCCTGGTAGCAGTTTATGTAGCCAGTGGATATATAGAA CAGAAAGTTAATTCAGCAGAGACAGGGCAGGAAACAGCATATTTTTCTTAAAAATTAGCA GGAAGATGGCCAGTAAAAACAATACATACAGACAATGGCAGCAATTTACCAGTACTACG GTTAAGCCGCTGTGGTGGGCAGGGATCAAGCAGGAATTTGGCATTCCTTACATCC CAAAGTCAAGGAGTAGTAGAATCTATGAATAATGAATTAAGAAAAATATAGGACAGGTA AGAGATCAGGCTGAACACCTTAAGACAGCAGTACAAATGGCAGTATTCATCCACAATTTT AAAAAAAAGGGGGGATTTGGGGGATACAGTGCAGGGGAAAGAATAGTAGACATAATAGCA ACAGACATACAACTAAAGAACTACAAAAGCAAATACAAAAATTCAAAATTTTCGGGTT TATTACAGGGACAACAAGATCCCCTTTGGAAAGGACCAGCAAAGCTTCTCTGGAAGGT GAAGGGCAGTAGTAATACAAGATAATAGTGACATAAAAGTAGTGCCAAGAAGAAAAGCA AAAATCATTAGGATTTATGGAAAACAGATGGCAGGTGATGATTGTGTGGCAAGTAGACAG GATGAGGATTAG</p>
Target 1 GenBank Gene ID	
Target 1 GeneCard ID	Not Available
Target 1 GenAtlas ID	Not Available
Target 1 HGNC ID	Not Available
Target 1 Chromosome Location	Not Available
Target 1 Locus	Not Available
Target 1 SNPs	SNPJam Report
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This project is supported by [Genome Alberta](#) & [Genome Canada](#), a not-for-profit organization that is leading Canada's national genomics strategy with \$600 million in funding from the federal government. This project is also supported in part by [GenomeQuest, Inc.](#), an enterprise genomic information company serving the life science community.