

## Product datasheet for **RN201204**

### Dio2 (NM\_031720) Rat Untagged Clone

#### Product data:

Product Type:	Expression Plasmids
Product Name:	Dio2 (NM_031720) Rat Untagged Clone
Symbol:	Dio2
Synonyms:	5DII; DIOII
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)
Cell Selection:	Neomycin
Fully Sequenced ORF:	>RN201204 representing NM_031720 Red=Cloning site Blue=ORF Orange=Stop codon

TTTTGTAATACGACTCACTATAGGGCGGCCGGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
GCC**CGGATCGCC**

ATGGGACTCCTCAGCGTAGACTTGCTGATCACTCTTCAGATTCTGCCAGTCTTTTTCTCCAAGTGCCTCT  
TCCTGGCGCTCTATGACTCGGTCATTCTGCTCAAGCACGTGGCGCTGCTCTCAGCCGCTCCAAGTCCAC  
TCGCGGAGAGTGGAGGCGCATGCTGACCTCAGAAGGACTACGCTGTGTCTGGAACAGCTTCTCCTAGAC  
GCCTACAAACAGGTTAAATTGGGTGAAGATGCTCCCAATTCAGTGTGGTGCACGTGTCCAATCCTGAAG  
CAGGTAACAATTGTGCCTCAGAGAAGACGGCGGATGGGGCTGAATGCCACCTTCTTGACTTTGCCAGTGC  
AGAGCGCCCACTGGTGGTCAACTTTGGTTCAGCGACCTGACCACCTTTTACTAGGCAACTGCCAGCCTTC  
CGCCAGTTGGTGAAGAGTTCTCCTCGGTGGCTGACTTCTGTTGGTATACATTGATGAGGCTCACCCCTT  
CAGATGGCTGGCAGTGCCTGGGACTCCTCTATGTCTTTTGGGTTAAGAAGCACCGGAACCAAGAGGA  
CCGATGTGCTGCAGCCCACCAGCTCCTGGAGCGTTTCTCCTTGCCGCCCCAGTGTCAAGTTGTGGCTGAC  
CGCATGGACAATAATGCCAACGTAGCTTATGGGGTAGCCTTTGAACGTGTGTGCATCGTGCAGAGACGGA  
AAATTGCTTACTTAGGAGGGAAGGGCCCTTCAGCTATAACCTGCAAGAAGTCCGAAGTTGGCTGGAGAA  
GAATTCAGCAAGAGATGAATTCTAGATTAG

**ACGCGT**ACGCGGCCGCTCGAGCAGAAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATT  
ACAAGGATGACGACGATAAGGTTTAA

Restriction Sites:	Sgfl-Mlul
ACCN:	NM_031720
Insert Size:	801 bp



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<b>OTI Disclaimer:</b>	Our molecular clone sequence data has been matched to the reference identifier above as a point of reference. Note that the complete sequence of our molecular clones may differ from the sequence published for this corresponding reference, e.g., by representing an alternative RNA splicing form or single nucleotide polymorphism (SNP). The expression of this clone is not guaranteed due to the nature of selenoproteins.
<b>Components:</b>	The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).
<b>Reconstitution Method:</b>	<ol style="list-style-type: none"><li>1. Centrifuge at 5,000xg for 5min.</li><li>2. Carefully open the tube and add 100ul of sterile water to dissolve the DNA.</li><li>3. Close the tube and incubate for 10 minutes at room temperature.</li><li>4. Briefly vortex the tube and then do a quick spin (less than 5000xg) to concentrate the liquid at the bottom.</li><li>5. Store the suspended plasmid at -20°C. The DNA is stable for at least one year from date of shipping when stored at -20°C.</li></ol>
<b>RefSeq:</b>	<a href="#">NM_031720.4</a> , <a href="#">NP_113908.3</a>
<b>RefSeq Size:</b>	6301 bp
<b>RefSeq ORF:</b>	789 bp
<b>Locus ID:</b>	65162
<b>UniProt ID:</b>	<a href="#">P70551</a>
<b>Cytogenetics:</b>	6q31
<b>Gene Summary:</b>	<p>The protein encoded by this gene belongs to the iodothyronine deiodinase family. It catalyzes the conversion of prohormone thyroxine (3,5,3',5'-tetraiodothyronine, T4) to the bioactive thyroid hormone (3,5,3'-triiodothyronine, T3) by outer ring 5'-deiodination. This gene is expressed in a few tissues in rat, including brain, pituitary and brown adipose tissue. It is thought to be responsible for the 'local' production of T3, and thus important in influencing thyroid hormone action in these tissues. Studies in rat suggest that this gene may play an important role in the regulation of lipid metabolism and thermogenesis, and in osteoarthritis pathogenesis by enhancing the chondrocyte hypertrophy and inflammatory response. This protein is a selenoprotein containing the non-standard amino acid, selenocysteine (Sec), which is encoded by the UGA codon that normally signals translation termination. The 3' UTRs of selenoprotein mRNAs contain a conserved stem-loop structure, designated the Sec insertion sequence (SECIS) element, that is necessary for the recognition of UGA as a Sec codon, rather than as a stop signal. Unlike the other two members (DIO1 and DIO3) of this enzyme family, the mRNA for this gene contains an additional in-frame UGA codon that has been reported (in human) to function either as a Sec or a stop codon, resulting in two potential isoforms with one or two Sec residues; however, only the upstream Sec (conserved with the single Sec residue found at the active site in DIO1 and DIO3) was shown to be essential for enzyme activity (PMID:10403186). In addition, the lack of conservation of the protein extension past the second TGA codon suggests that the one-Sec containing isoform represents the canonical form. [provided by RefSeq, Oct 2018]</p>