Report

Common and Divergent Roles for Members of the Mouse DCX Superfamily

Frédéric M. Coquelle1,6
Talia Levy1
Sven Grayer Wolf3
Daniela Bar-El1
Tamar Sapir1
Yehuda Brody1
Irit Orr4
Naama Barkai1
Gregor Eichele5
Orly Reiner1,*

1Department of Molecular Genetics; Weizmann Institute of Science; Rehovot, Israel
2Department of Medical Genetics; University of Lausanne; Switzerland
3Electron Microscopy Unit and 4Department of Biological Services; Weizmann Institute of Science; Rehovot, Israel
5Max-Planck Institute; Hannover, Germany
†Present address: CNRS-UMR 6026; Université de Rennes 1; Equipe SDM; Campus de Beaulieu-Bat. 13; 35042 Rennes cedex, France

*Correspondence to: Frederic M. Coquelle; Department of Molecular Genetics; Weizmann Institute of Science; Rehovot, Israel; Tel.: +972-8-9342319; Fax: +972-8-9344108; Email: orly.reiner@weizmann.ac.il

Original manuscript submitted: 02/21/06
Manuscript accepted: 03/18/06
This manuscript has been published online, prior to printing for Cell Cycle, Volume 5, Issue 9. Definitive page numbers have not been assigned. The current citation is: Cell Cycle 2006; 5(9): http://www.landesbioscience.com/journals/cc/abstract.php?id=2715 Once the issue is complete and page numbers have been assigned, the citation will change accordingly.

KEY WORDS
doublecortin, microtubules, protein family, cytoskeleton, actin, intracellular localization

SUPPLEMENTARY MATERIAL

Supplementary Figure 1. Sequences of the primers used in this study.

BAC26042 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
RP1 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
DCDC2 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
DCDC2B 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
DCLK2, 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
RPIL1, 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.
FLJ46154, 5′-gagggattcatgtggcagcccaagcc-3′ and 5′-gactcaagctattttctttttttcagg-3′.

Supplementary Figure 2. A–D) Most cells overexpressing DCDC2 demonstrate nuclear and nucleolar localization for this protein. (E–H) Cells untreated with nocodazole demonstrate normal MT cytoskeleton. (I–L) One-hour treatment with 33 µM nocodazole disrupts MTs.
Supplementary Table 1  Genomic information regarding the chromosomal positions of the DCX superfamily genes, their accession numbers, and the number of exons

<table>
<thead>
<tr>
<th>protein name</th>
<th>accession</th>
<th>gene name</th>
<th>accession #</th>
<th>mouse chromosome</th>
<th>position start</th>
<th>position end</th>
<th>size</th>
<th>exons</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCX</td>
<td>NP_034155</td>
<td>doublecortin</td>
<td>NM_010025</td>
<td>X</td>
<td>138520162</td>
<td>138597539</td>
<td>77378</td>
<td>7</td>
</tr>
<tr>
<td>DCLK</td>
<td>NP_064362</td>
<td>doublecortin-like kinase</td>
<td>NM_019978</td>
<td>3</td>
<td>55371953</td>
<td>55666003</td>
<td>294051</td>
<td>17</td>
</tr>
<tr>
<td>DCLK2</td>
<td>NP_081815</td>
<td>doublecortin-like kinase 2</td>
<td>NM_027539</td>
<td>3</td>
<td>86899005</td>
<td>8703704</td>
<td>134700</td>
<td>16</td>
</tr>
<tr>
<td>RP1</td>
<td>NP_035413</td>
<td>retinitis pigmentosa 1 homolog</td>
<td>NM_011283</td>
<td>1</td>
<td>4339735</td>
<td>4355984</td>
<td>16250</td>
<td>4</td>
</tr>
<tr>
<td>RP1L1</td>
<td>XP_920003</td>
<td>Retinitis pigmentosa 1-like 1 protein</td>
<td>XM_914910</td>
<td>14</td>
<td>58856325</td>
<td>58897383</td>
<td>41059</td>
<td>4</td>
</tr>
<tr>
<td>DCDC2</td>
<td>AAH45136</td>
<td>Doublecortin domain-containing 2</td>
<td>BC045136</td>
<td>13</td>
<td>24421806</td>
<td>24487325</td>
<td>65520</td>
<td>8</td>
</tr>
<tr>
<td>DCDC2A</td>
<td>XP_917846</td>
<td>Doublecortin domain-containing protein 2 A</td>
<td>XM_912753</td>
<td>12</td>
<td>26392694</td>
<td>26394142</td>
<td>1449</td>
<td>2</td>
</tr>
<tr>
<td>DCDC2B</td>
<td>XP_357395</td>
<td>Doublecortin domain-containing protein 2 B</td>
<td>XM_357395.2</td>
<td>4</td>
<td>129053427</td>
<td>129058904</td>
<td>5478</td>
<td>8</td>
</tr>
<tr>
<td>FLJ46154</td>
<td>XP_489892</td>
<td>FLJ46154</td>
<td>XM_489892.3</td>
<td>2</td>
<td>106186678</td>
<td>106229799</td>
<td>43122</td>
<td>15</td>
</tr>
<tr>
<td>BAC26042</td>
<td>BAC26042</td>
<td>BAC26042</td>
<td>AK028639</td>
<td>2</td>
<td>106234467</td>
<td>106256938</td>
<td>22472</td>
<td>4</td>
</tr>
</tbody>
</table>

Supplementary Figure 3. Controls for coimmunoprecipitations. No immunoprecipitation was observed using protein A/G beads only (upper panel). The construct of the C-terminal part of DCX did not interact significantly with JIP1 and JIP2, some interaction with the PID and SH3 domain of JIP1 was observed, albeit at a much lower level than with DCX, compare middle panel with the lower panel.