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- (71) Applicant (*for all designated States except US*): **PARADIGM GENETICS, INC.** [US/US]; 108 Alexander Drive, P.O. Box 14528, Research Triangle Park, NC 27709-4528 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **ASCENZI, Robert** [US/US]; 741 Landing Lane, Cary, NC 27511 (US). **BOYES, Douglas** [US/US]; 361 Vickers Road, Chapel Hill, NC 27514 (US). **HOFFMAN, Neil** [US/US]; 115 Silo Drive, Chapel Hill, NC 27514 (US). **DAVIS, Keith** [US/US]; 4119 Cobblestone Place, Durham, NC 27707 (US). **ZAYED, Adel** [EG/US]; 1021 Fenwick Parkway, Durham, NC 27713 (US). **MULPURI, Rao** [IN/US]; 2426 Castlebury Drive, Apex, NC 27502 (US). **WOESSNER, Jeffrey** [US/US]; 2728 Canter Drive, Hillsborough, NC 27278 (US). **GORLACH, Jorn** [US/US]; 3194 Quarry Road, Manchester, NJ 08759 (US). **HAMILTON, Carol** [US/US]; 2006 Weehawken Place, Apex, NC 27502 (US).
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(54) Title: METHODS FOR THE IDENTIFICATION OF INHIBITORS OF 3-OXO-5-ALPHA-STEROID 4-DEHYDROGENASE EXPRESSION OR ACTIVITY IN PLANTS

(57) Abstract: The present inventors have discovered that 3-oxo-5-alpha-steroid 4-dehydrogenase (DET2) is essential for plant growth. Specifically, the inhibition of DET2 gene expression in plant seedlings resulted in seedlings that are shorter than controls and chlorotic. Thus, DET2 can be used as a target for the identification of herbicides. Accordingly, the present invention provides methods for the identification of compounds that inhibit DET2 expression or activity, comprising: contacting a compound with a DET2 and detecting the presence and/or absence of binding between said compound and said DET2, or detecting a decrease in DET2 expression or activity. The methods of the invention are useful for the identification of herbicides.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST, STN, MEDLINE, BIOSIS, CAPLUS, EMBASE, GENBANK
search terms: steroid 5 alpha reductase, screen, herbicide, plant, arabidopsis

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,187,811 B1 (LANE) 13 February 2001, see entire document.	1-17
Y	US 5,730,964 A (WALDSTREICHER) 24 March 1998, see entire document.	1-17
Y	SINGH, S. Light and Cytokinin Regulation of Leaf Senescence and Hypocotyl Growth in det-2 Mutant and Wild-Type Arabidopsis Thaliana Plants: a laboratory exercise. Plant Physiology. August 1997, Vol. 114, No. 3, SUPPL. Abstract No. 1662, page 316, see entire document.	1-17

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
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Box PCT
Washington, D.C. 20231

Facsimile No. (703) 805-8280

Authorized officer

ARUN CHAKRABARTI

Telephone No. (703) 808-0196

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>LEVY, M.A. et al. Interaction between Rat Prostatic Steroid 5α-reductase and 3-Carboxy-17β-substituted Steroids: Novel Mechanism of Enzyme Inhibition. <i>J. Steroid Biochem.</i> September 1989, Vol. 34, Nos. 1-6, pages 571-575, see entire document.</p>	1-17
Y	<p>LIN, X. et al. Sequence and Analysis of Chromosome 2 of the Plant <i>Arabidopsis Thaliana</i>. <i>Nature.</i> 16 December 1999, Vol. 402, pages 761-768, see entire document.</p>	3, 4, 10, 11, 14, 15