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Gleba et al.(10) **Patent No.:** **US 7,763,458 B2**
(45) **Date of Patent:** ***Jul. 27, 2010**(54) **VECTOR SYSTEM FOR PLANTS**(75) Inventors: **Yuri Gleba**, Halle (DE); **Yurii Dorokhov**, Moscow (RU); **Peter Ivanov**, Moscow (RU); **Joseph Atabekov**, Moscow (RU)(73) Assignee: **Icon Genetics GmbH**, Munich (DE)

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2007/0166820 A1 7/2007 Smith et al.(21) Appl. No.: **10/398,260**(22) PCT Filed: **Oct. 8, 2001**(86) PCT No.: **PCT/EP01/11629**§ 371 (c)(1),
(2), (4) Date: **Oct. 22, 2003**(87) PCT Pub. No.: **WO02/29068**PCT Pub. Date: **Apr. 11, 2002**(65) **Prior Publication Data**

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C12N 15/63 (2006.01)(52) **U.S. Cl.** **435/320.1; 536/24.1**(58) **Field of Classification Search** None
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The invention describes virus-based amplification vectors for plants containing additional plant-specific internal ribosome entry site (IRES) element(s) allowing for a polycistronic translation and a cap-independent translation of: a) heterologous gene(s); b) whole viral genome or c) viral subgenomic RNAs. Said IRES elements are of plant viral origin, or they are isolated from other organisms or engineered using different synthesis procedures. Said IRES element(s) and said heterologous gene(s) are inserted into amplification vectors and allow for the expression of said heterologous gene(s) in the absence of additional viral promoters, in particular, said expression is achieved through cap-independent translation.

9 Claims, 30 Drawing Sheets