



(51) International Patent Classification:

C07K 14/47 (2006.01) C12N 15/64 (2006.01)
C07K 14/145 (2006.01) C12N 15/867 (2006.01)

(21) International Application Number:

PCT/GB2018/052656

(22) International Filing Date:

18 September 2018 (18.09.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1715052.5 19 September 2017 (19.09.2017) GB

(71) Applicant: **OXFORD GENETICS LIMITED** [GB/GB];
First Floor, Medawar 1, Robert Robinson Avenue, The Oxford
Science Park, Oxford Oxfordshire OX4 4GA (GB).

(72) Inventors: **CAWOOD, Ryan**; c/o Oxford Genetics Ltd,
First Floor, Medawar 1, Robert Robinson Avenue, The Oxford
Science Park Oxford Oxfordshire OX4 4GA (GB). **PAYNE, Tom**;
c/o Oxford Genetics Ltd, First Floor, Medawar 1, Robert Robinson
Avenue, The Oxford Science Park Oxford Oxfordshire OX4 4GA (GB).
DUNAJOVA, Lucia; c/o Oxford Genetics Ltd, First Floor, Medawar 1,
Robert Robinson Avenue, The Oxford Science Park Oxford
Oxfordshire OX4 4GA (GB). **PARKER-MANUEL, Richard**;
c/o Oxford Genetics Ltd., First Floor, Medawar 1,
Robert Robinson Avenue, The Oxford Science Park Oxford
Oxfordshire OX4 4GA (GB).

(74) Agent: **DEHNS**; St Bride's House, 10 Salisbury Square,
London Greater London EC4Y 8JD (GB).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

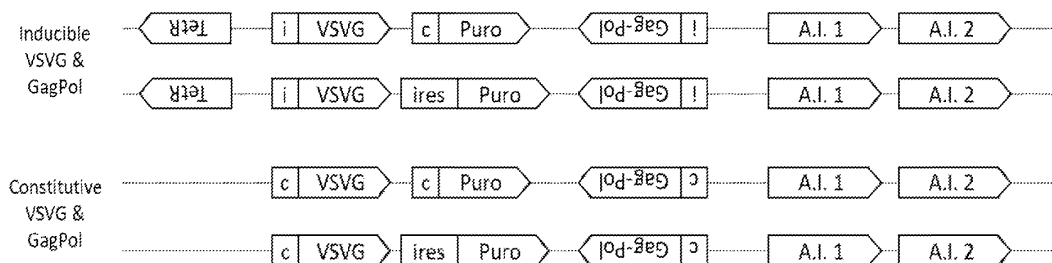
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- with sequence listing part of description (Rule 5.2(a))

(54) Title: RETROVIRAL VECTORS

Figures 3



(57) Abstract: The present invention relates to nucleic acid molecules comprising viral genes or derivatives thereof for use in the production of retroviral packaging vectors, and retroviral packaging and producer cell lines. In one embodiment, the nucleic acid molecules comprise *env* and *gag-pol* genes wherein the coding sequences of the *env* and *gag-pol* genes are in opposing orientations.

