

(10) International Publication Number  
**WO 2017/053315 A1**(43) International Publication Date  
30 March 2017 (30.03.2017)(51) International Patent Classification:  
A01K 67/027 (2006.01) C07K 14/72 (2006.01)(21) International Application Number:  
PCT/US2016/052693(22) International Filing Date:  
20 September 2016 (20.09.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
62/221,444 21 September 2015 (21.09.2015) US  
62/327,115 25 April 2016 (25.04.2016) US

(71) Applicant: RECOMBINETICS, INC. [US/US]; 1246 University Avenue West, Suite 301, Saint Paul, MN 55104 (US).

(72) Inventors: SONSTEGARD, Tad, S.; 238 Upland Lane, Centreville, MD 21617 (US). CARLSON, Daniel, F.; 9127 Juneau Alcove, Woodbury, MN 55125 (US). FAHRENKRUG, Scott, C.; 3433 East 25th Street, Minneapolis, MN 55406 (US).

(74) Agents: HERBERT, Curtis, B. et al.; Dardi &amp; Herbert, PLLC, Moore Lake Plaza, Suite 205, 1250 East Moore Lake Drive, Fridley, MN 55432 (US).

(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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, 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,

[Continued on next page]

(54) Title: GENETICALLY MODIFIED ANIMALS HAVING INCREASED HEAT TOLERANCE

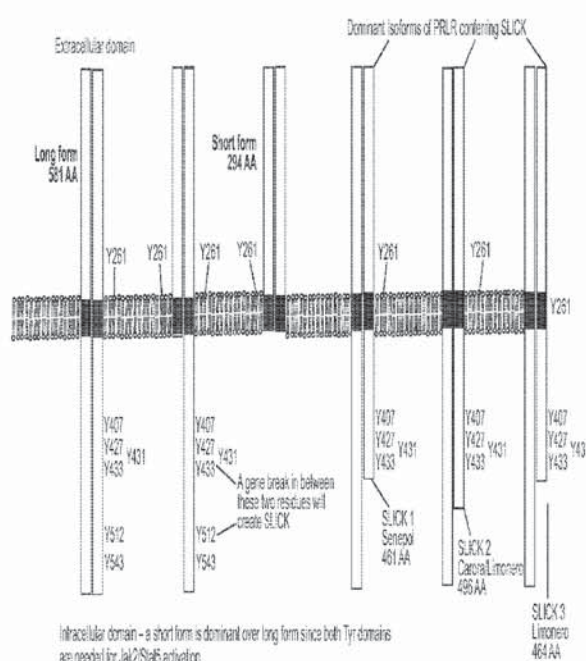


FIG. 1

(57) Abstract: Disclosed herein are genomically modified livestock animals and methods to provide them that express the SLICK phenotype. The animals disclosed herein express a truncated allele for the prolactin receptor (PRLR) gene. When expressed, the livestock animals produce a PRLR that is missing up to the terminal 148 amino acid (aa) residues of the protein all ranges and values within the explicitly stated range are contemplated: e.g., from 148 to 69. Animals expressing SLICK have superior thermoregulatory ability compared to non-slick animals and experience a less drastic depression in milk yield during the summer.



---

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, — *with sequence listing part of description (Rule 5.2(a))*  
GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report (Art. 21(3))*