

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization

International Bureau

(43) International Publication Date  
23 June 2022 (23.06.2022)



(10) International Publication Number  
**WO 2022/133289 A3**

(51) International Patent Classification:

A61K 31/513 (2006.01) C07H 19/06 (2006.01)  
A61K 31/70 (2006.01) C12P 19/38 (2006.01)

(21) International Application Number:

PCT/US2021/064161

(22) International Filing Date:

17 December 2021 (17.12.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/127,431 18 December 2020 (18.12.2020) US  
63/148,324 11 February 2021 (11.02.2021) US

(71) Applicant: **CODEXIS, INC.** [US/US]; 200 Penobscot Drive, Redwood City, California 94063 (US).

(72) Inventors: **VROOM, Jonathan**; 200 Penobscot Drive, Redwood City, California 94063 (US). **HURTAK, Jessica, Anna**; 200 Penobscot Drive, Redwood City, California 94063 (US). **KNIGHT, Anders, Matthew**; 200 Penobscot Drive, Redwood City, California 94063 (US).

(74) Agent: **NEELY WILLIS, Melanie** et al.; Codexis, Inc., 200 Penobscot Drive, Redwood City, California 94063 (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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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).

(54) Title: ENGINEERED URIDINE PHOSPHORYLASE VARIANT ENZYMES

(57) Abstract: The present invention provides engineered uridine phosphorylase (UP) enzymes, polypeptides having UP activity, and polynucleotides encoding these enzymes, as well as vectors and host cells comprising these polynucleotides and polypeptides. Methods for producing UP enzymes are also provided. The present invention further provides compositions comprising the UP enzymes and methods of using the engineered UP enzymes. The present invention finds particular use in the production of pharmaceutical compounds.

WO 2022/133289 A3